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ABSTRACT

This annotated bibliography undertakes to examine and analyze the literature of the communication field and related areas with the objective of identifying all significant published material dealing with environmental communications. Included are: (1) background on environmental communication; (2) strategy and tactics of the environmental communication literature review; (3) an index; (4) journal abstracts; and (5) book abstracts. (Author/RE)

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An Annotated Bibliography of Environmental Commmunication Research and Commentary: 1969-1979

by

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ENVIRONMENTAL EDUCATION INFORMATION REPORTS

Environmental Education Information Reports are issued to analyze and summarize information related to the teaching and learning of environmental education. It is hoped that these reviews will provide information for personnel involved in development, ideas for teachers, and indications of trends in environmental education.

Your comments and suggestions for this series are invited.

John F. Disinger
Associate Director
Environmental Education

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FOREWORD

Interrelationships among the humankind-land-technology ecosystem have been the subject of discourse and discord at least since times reported in the Old Testament. In Genesis, for example, we are adjured to "subdue" the earth and its creatures, yet Deuteronomy records a strict wildlife conservation law; although the Psalms picture heaven as a gold-paved city, Isaiah prophesies "woe unto them that join house to house....'till there is no place where one may be alone in the midst of the earth." Clearly, for a long time inter-human communication has been concerned with the construction of what Aldo Leopold would later call a "man-land ethic"--in other words, with environmental education.

Since the introduction of the specific term some 10 to 20 years ago, "environmental education" has become a battlefield of multiple efforts to achieve concensus definition. Major deterrents to elucidation have stemmed from the internal debates among many "breeds" who consider themselves environmental educators, the while using the term as a fad label for manifold pre-existing constructs, or as a "brand new" label for a "brand new" concept, no less than from the insistence of others that the term is redundant, its content and process better treated as subsets of any of a number of established fields. Attempts at clarification are likewise clouded by those whose definitions are sufficiently global as to be effectively all-subsuming, therefore meaningless in any practical sense, or by those whose definitions are so parochial as to be picayune.

Thus, "environmental education" has been and is an arena for confrontation between "lumper" and "splitters," between "globalists" and "reductionists." Resolution probably is not foreseeable in the near-term future, for good or ill.

At the same time, "environmental education," however defined, has been developing a literature base, in some part on its own but to a greater extent in fragments within the literature of various disciplines. This cacophony is clearly reflected in the toils of many, including those of us involved in the continued development of the ERIC data base and that part of it which is labeled "environmental education," who find bits of environmental education research and commentary scattered across a broad spectrum of sources.

For purposes of effective consideration of its literature base, then, it seems useful to slice the environmental education pie in a particular manner, such that its main segments might be labeled *environmental studies, environmental communication,* and *environmental education.* Using such a construct, working definitions can be said to be:

Environmental Studies--Those interdisciplinary, scientific, content-based considerations which are inherent to any understanding of the environment, its workings, and its problems.

Environmental Communication--The sum of those portions of the total relatively informal information flow in the social system that have a common environmental content.

Environmental Education—Relatively formal programs aimed at producing a citizenry that is knowledgeable concerning the environment and its associated problems, aware of how to help solve those problems, and motivated to work toward their solutions.

This Annotated Bibliography of Environmental Communication Research and Commentary: 1969-1979 attacks head-on the second of the three segments in as exhastive a manner as has been attempted to date. A substantive effort has been made to scrutinize, and initiate analysis of, the literature of the communication field and related areas, the objective being to seek out all significant published material falling within the "environmental" domain. No doubt some pieces, even some key pieces, have been missed, but the thoroughness of the exercise, and the resultant product, provide a significant tool for those who labor in the environmental communication field, be they academician or practitioner.

During the next year, a National Commission on Environmental Education Research, vitalized by the National Association for Environmental Education, will be involved in a related effort, targeting on the "Environmental Education" segment of the literature base per se. It is possible, and desirable, that these activities will be of continuing use not only as valuable bibliographies in and of themselves, but as significant steps toward clearer definitions, research azimuths, and field applications.

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December 1979

Environmental Communication:

The Background

ENVIRONMENTAL COMMUNICATION: THE BACKGROUND

In our kind of country, enlightened environmental husbandry depends, if not on total public support, at least on general public sufferance. Environmental communication media and modes are the phloem--the conduits--through which flows the environmental information basic to the cultivation of a xylem--a fiber--of public opinion favorable to environmental sanity.

Let us at the outset define our terms a little more precisely. What exactly is environmental communication; in contradistinction, particularly, to environmental education?

With respect to the root terms, Webster is by no means clear, nor need he be. Communication is said to be the "interchange of thoughts and opinions," while education is said to be the "act or process of developing mentally and morally." But certainly communication can lead to education, and education can involve communication.

Communication frequently may connote a process less purposeful and less formal than that of education. Education, on the other hand, may connote schools and schooling, although it certainly need not necessarily involve such instrumentalities. For some, communication is the umbrella term, with education subsumed under it. For others, education is all-encompassing, with communication an aspect or component.

DEFINING ENVIRONMENTAL COMMUNICATION

For practical purposes herein, let us define communication as the interchange of both cognitive facts and affective opinions through other than formal means of education; meanwhile recognizing that such interchange can in fact effect education, and that formal means of education must in fact involve communication. Environmental communication then becomes the sum of those portions of the total information flow in the social system that have a common environmental content.

Significantly, in the maiden issue of The Journal of Environmental Education in 1969 environmental education was defined as "communication aimed at producing a citizenry that is knowledgeable concerning our environment and its associated problems, aware of how to help solve those problems, and motivated to work toward their solution."

What are the concepts embodied in that use of the term environmental education/communication, and particularly in counterdistinction to

antecedent forms of conservation education/communication? The key concepts were distilled in that same first issue of the JEE:

In locus, the fouled, clogged arteries of the city quite as much as scarred countryside.

In scope, a comprehensive, interrelated humankind-environment-technology system.

In focus, global environmental impacts of crisis proportions threatening the well-being of all humankind on an over-crowded planet.

In content, tough ecological choices, not easy unilateral fixes.

In strategy, long-range impact analyses and rational planning.

In tactics, grass-roots participation in resource policy formation—in the streets and through institutional channels.

In prospect, a necessary reliance on alternative sources of energy.

In philosophy, a commitment to less destructive technologies and less consumptive lifestyles.

In essence, a recognition of pervasive interdependencies, that everything is connected to everything else—what Jerome Perlinski has called "the principal intuition of the 20th century."

It would be a mistake, of course, to assume that all of these concepts have been shared equally by all the individuals, groups, and agencies flying an environmental flag. Environmental education/communication has called for action in one of the three principal modes that characterize the reactions of Americans to social problems—retreat, revolt, and reform.

Allied with a wave of anti-materialism current in the late 1960's and early 1970's, environmental E/C of one mode has called for a type of counter-culture. Carried to the ultimate, this retreat from modernity has led thousands of young people back to wood-heated country cabins, if not to desert communes.

Allied with a wave of pro-civil rights and anti-Vietnam riots also current in the late 1960's and the early 1970's, environmental E/C of another type has called for guerilla tactics against despoilers of the environment, if not an outright assault on capitalism. The "battleground tactics" recommended in a "field manual" of the day ran the gamut from petitioning and picketing to outright "perturbance of the system."

More commonly, environmental E/C has called for reforms on the part of existing public and private institutions, or for the creation of new and more enlightened instrumentalities in both the public and private sectors. Particularly, environmental E/C has been directed toward more

extensive and enlightened public participation in the formation and implementation of environmental policy, again in both the public and private sectors.

Specifically, then, environmental communication can be said to encompass the process of planning, producing, and disseminating, or conducting research related to written, spoken, or pictorial messages about the environment, environmental management, or environmental issues. Environmental communicators seek in various situations and ways to increase public awareness of environmental problems and public understanding of underlying basic principles, current issues, and remedial options. Some environmental communicators may go on to encourage public commitment to individual and collective action on behalf of particular types of environmental protection and enhancement.

What might be termed the environmental communication "ecosystem" includes the mass and specialized print, graphic, and electronic media; government resource management agencies at federal, state, and local echelons; appropriate professional societies; citizen environmental organizations, old and new; the resource industries and associated labor organizations; colleges and universities, particularly their extension arms, their schools of natural resources and engineering, and their environmental studies centers; and such special educational instrumentalities as nature centers, libraries, and museums. In each of these components are to be found today persons practicing environmental communication as we have defined the term.

CONSERVATION-COMMUNICATION SYMBIOSIS

Although we may be sometimes inclined to think so, environmental communication did not spring to full flower overnight on Earth-Day, 22 April 1970. Communication had been the handmaiden of the antecedent conservation movement. For striking examples of the role of communication in conservation, look at the careers of every one of the leaders recorded in Professor Douglas Strong's book, The Conservationists:

Henry Thoreau was a sometime pencil-maker and quasi-hermit who found his calling as a great writer. Frederick Law Olmstead, pioneer landscape architect, early turned to writing to promote his city planning concepts. George Perkins Marsh, the epitome of the Renaissance man—lawyer, farmer, manufacturer, congressman, diplomat—is best known today as a landmark author. John Wesley Powell personally publicized his classic explorations in newspaper articles and books. John Muir might have whittled away his days as the "tramp" he said he was if he had not entered into a remarkable alliance with a leading magazine editor of the day. Stephen Mather came to his National Park Service from a background as newspaper reporter and soap salesman. Aldo Leopold was early on the secretary of the Albuquerque (N.M.) Chamber of Commerce and the writer of innumerable pamphlets. FDR turned to novel radio chats to sell his CCC, SCS, and TVA. Stewart Udall's pen helped his fellow Americans discover a "quiet crisis."

Gifford Pinchot may have been the premier communicator of them all. Author Strong calls him "a shrewd manipulator of public opinion...Through a stream of press releases and speeches, and by active lobbying in Congress, he carried his crusade for 'practical forestry' before the American people." Felice Goodman Levin, a particular student of Pinchot as a PR man, says the devices his team used were "as sophisticated as any could have been without the availability of broadcast media": publications, newspaper publicity, periodicals, teacher education, field manuals, correspondence, organizing of outside groups, and, of course, the staging of such events as the celebrated 1908 White House Conference on Conservation.

But Dr. Strong, in his assessment of leading conservationists, may have been swayed by the captivating personalities he was portraying. What of historians and social commentators viewing more dispassionately the "development of environmental concern," which is the sub-title of a recent collection of seminal essays assembled by Carroll Pursell? How do those observers view the role of communication via a vis what today is environmental education?

Roderick Nash credits Robert Underwood Johnson, associate editor of Century, with conceiving and managing the campaign to create Yosemite National Park in 1890. James Leonard Bates credits a "remarkable and versatile" author, W J McGee, with scripting the White House Conference on Conservation in 1908. Samuel P. Hays credits nationwide pressure groups as "the most effective technique adopted by resource users to influence resource decisions," post 1912. Donald C. Swain credits Herbert Hoover in the 1920's as he "crusaded from his cabinet office in Washington for conservation causes." Leo Marx credits "the mass media" with beginning "to spread the alarm toward the end of the 1960's," although he points out that America's traditional pastoral literature had previously represented "a serious criticism, explicit or implied, of the established social order" and its environmental degradation. Norman J. Faramelli agrees that "during 1970 the ecological crisis was brought before the American public via television, magazines, newspapers, and other media." Editor Pursell points out that in that year three national magazines of varied persuasions devoted special issues to the problem, each of which was turned into a book--the magazines Ramparts, The Progressive, and Fortune. The lead article in Ramparts, by Katherine Barkley and Steve Weisman, is particularly provocative. According to their scenario, the environmental movement was actually built by big business "conservationists" as a diversion from other social ills, their rallying point the Ford-Rockefeller funded Resources for the Future Center, with the media "plugged in"--"an easy task for men who have in their hands the direction of CBS, NET, Time, Christan Science Monitor, New York Times, and Cowles publications, as well as many of the trade journals and conservation magazines."

Meanwhile the DAR and the John Birch Society were crediting environmentalists with undermining the foundations of American free enterprise. After all, wasn't E-Day, 22 April 1970, Lenin's birthday in disguise?

Whatever, whether environmentalism is a democratic grass-roots uprising in the Bates tradition, a Haysian triumph of the technological gospel of efficiency, a Wall Street holding action, a Communist plot, or something else, a communication flow has been both a root and a result.

ROOTS OF ENVIRONMENTAL COMMUNICATION

Now let us look a little more systematically at the antecedents of today's environmental communication, for if we are really to understand the genre, we must appreciate its genealogy.

Nature Writing

While nature writing can be traced back at least to the Psalms, in its modern form American nature writing has taken its inspiration from the Lake Poets of England in the 17 and 18 hundreds, and especially from William Wordsworth. Perhaps in his "Lines Composed Above Tintern Abbey" he captured most succinctly the characteristics of nature writing: fascination with nature's vast, pulsing harmony, in and of itself and as a charmed, magic casement opening on universal truth as revealed through nature.

Few products of high school literature courses are unfamiliar with at least some works of distinguished early American nature writers, 1830-1920: for example, William Cullen Bryant, Thornton W. Burgess, John Burroughs, Ralph Waldo Emerson, David Grayson, John Muir, Henry David Thoreau, Walt Whitman. Their more modern counterparts, while retaining a sense of awe, have informed their writings with a more sophisticated ecological understanding: Ansel Adams, Hal Borland, Rachel Carson, August Derleth, Loren Eiseley, Joseph Wood Krutch, Aldo Leopold, Sigurd Olson, Donald Culrose Peatty, Edwin Way Teale, and many others. For readers, if not for writers themselves, nature writing has also represented an escape from urban degradation, a nostalgia for the seemingly simple bucolic joys of a pre-industrial age. The presence of nature writing--and nature photography--continues measurable today. The magazines National Wildlife and Audubon, for example, are devoted pretty exclusively to the genre.

Outdoor Recreation and Travel Writing

While closely related to nature writing, outdoor recreation and travel writing have distinctive lineage and characteristics.

Writing under the pen-name Frank Forester, William Henry Herbert brought outdoor writing to America in the late 1830's. Appealing to devotees of hunting and fishing, he outlined the basics of sporting etiquette and lamented the commercial destruction of wildlife and habitat. With the appearance of national periodicals like American Sportsman (1861), Forest and Stream (1873), and American Angler (1881), such outdoor writers as George Bird Grinnell and Emerson Hough not only

delineated the good life of the "sportsman" but played an active role in early movements to conserve wildlife, forests, and parks. Today the genre is represented by the outdoor writer on the sports pages of practically every daily newspaper and by the "big three" outdoor magazines, Field and Stream, Sports Afield, and Outdoor Life. Other writers and other publications specialize in other forms of outdoor recreation, from golf to backpacking.

It was travel writers who lured our ancestors to America. Beginning at least with Michel Guillaume St. Jean de Crevecoeur in 1782, educated visitors from Europe sent back ecstatic essays about the New World. In the 1830's, as large numbers of Americans themselves began to explore their own country either for recreation or for homesteading, travel writing flourished. Typically one part nature writing, one part tour guide, and one part hard sell, travel writing was the plow that broke the plains, projected us to the Pacific, and laid the groundwork for early conservation successes; for example, the dispatches of a young Army lieutenant that finally lent credibilty to stories about the wonders of Yellowstone. Today, of course, travel writing continues to be big business, and in the case of National Geographic, at least, it frequently has an ecological flavor.

Science Writing

Ben Franklin may well have been the first American science writer. His story of his "Electric Kite" was duly recorded in his Pennsylvania Gazette in 1752. Scientific American first appeared in 1845, Science Magazine in 1883, the American Chemical Society News Service in 1919. In 1921 David Dietz became a newspaper science writer for Scripps Howard, Watson Davis' column, "What's New in Science," previewed in the Washington Herald, and Science Service sent out its first news syndicate weekly release. In 1923 Alva Johnson won a Pulitzer Prize for reporting the final acceptance of Darwin's theory of evolution by the science community. The 1887 creation of agricultural experiment stations at landgrant universities had stimulated the development of "technology transfer" specialists in agriculture via multiplying farm journals, and the emergence of medicine as a science rather than a barber-pole art produced a whole range of health writers. By 1934 the National Association of Science Writers had "officialized" the genre. In 1945 William L. Laurence won a Pulitzer for his sensitive reporting of the first atomic blast. Scientists particularly concerned about nuclear proliferation organized a Scientists' Institute for Public Information in the late 1940's. In 1958 the SIPI fostered a Committee for Environmental Information, which now has its own journal, Environment. Environmental engineers communicate through Environmental Science and Technology. Some science writers today have become environmental or energy specialists.

Public Affairs Reporting

Public affairs reporting, of course, is as old as journalism, but at the turn of this century in America it took on striking proportions. Print technology and urbanization combined to produce the first truly

national newspapers and magazines with massive circulations, and their growing freedom from political patronage opened their columns to a cadre of scintillating investigative reporters, whom Teddy Roosevelt in a moment of pique labeled "the muckrakers". Ida Tarbell on Standard Oil, Upton Sinclair on the meat packing "jungle," Lincoln Steffens on "the shame of the cities"--these and many others brought great visibility to brass-knuckles journalism and environmental issues. Robert Underwood Johnson of Century magazine particularly lent muckraking a classic environmental flavor with his stories and editorials exposing the rape of forest and parklands. From that day to this, solid public affairs reporting has accompanied if not inspired every conservation crusade, from the long fight over the Tennessee Valley's Muscle Shoals to today's debates over a national energy policy.

Persuasion

Persuasion, too, has a long history in America, dating at least from Thomas Paine's times that tried men's souls. But again it was at the turn of the century that persuasion and conservation made history in the person of Gifford Pinchot, as we have seen. A more modern counterpart has been David Brower, who in 1954 put together a remarkable consortium of conservation groups whose collective voice actually caused Congress to halt a Colorado dam that would have inundated Dinosaur National Monument. Brower's use of economic statistics quite as much as esthetic sentiments set the tone for much of the rhetoric of the environmental decade beginning 10 years later. For environmental persuaders of varied stripes, James Grunig has recently put together a fairly exhaustive "review of research on environmental public relations."

ENVIRONMENTAL COMMUNICATIONS EMERGENCE

When did nature writing, outdoor writing, science writing, public affairs reporting, and persuasion merge into environmental communication?

Each root produced a flower stalk in the 1960's. Wallace Stegner's 1960 "The Wilderness Idea," a lyrical essay on America's last strands of naturalness and solitude, was one of many nature writings that helped generate support for the passage of the Wilderness Act in 1964. While Aldo Leopold's Sand County Almanac had appeared originally in 1949, it was not until a 1966 paperback edition received wide circulation that his "noble elegy for the American earth and a plea for a new land ethic" vaulted classic outdoor writing into the ken of millions. In 1962 another rather small paperback hit the bookstands of America with the impact of a blockbuster, authored by a former U.S. Fish and Wildlife Service editor-biologist. Quietly and calmly this premier example of science writing questioned the massive use of chemical pesticides. Rachel Carson's Silent Spring "probably did more to alert the American people to the critical needs of their environment and their own health than any form of journalism before or since." The Rienows' Moment in the Sun in 1967 represented the searchlight of a team of public affairs reporters turned on the intrinsic beauty and the creeping degradation of the organism called America. Stewart Udall's The Quiet Crisis in 1963 was

in the great tradition of the American politician turned persuader for "an ever-widening concept and higher ideal of conservation." The 1969 National Environmental Policy Act, requiring environmental impact assessments on all major federally funded projects, created a new "hook" on which to hang environmental reporting, and vastly increased the quantity and quality of newspaper coverage of the environmental beat. The year 1969 also saw the emergence of a dozen specialized publications as custom carriers of environmental communications. At latest count there are now 93.

Irrespective of their roots, are there any common denominators among the various forms of environmental communication? Yes. All are focused on a comprehensive rather than a compartmentalized approach to the people-resources-technology system. A basic theme in environmental communication hence is interdependence--that everything is connected to everything else. This is "the principal intuition of the 20th century," as we have said. The practical problem faced by all environmental communicators, of course, is how to recognize and describe sound, fair trade-offs among energy, economy, and environment. It is a journalism of uncertainty.

THE ENVIRONMENTAL COMMUNICATION ECOSYSTEM TODAY

If it is true, as Pinchot said a generation ago, that "nothing permanent can be accomplished in this country unless it is backed by sound public sentiment," and if it is true that public sentiment rests on information flow, what is the status of the quantity and quality of environmental communication today?

The Media

The mass media--newspapers, general circulation magazines, radio, TV--discovered the environment as a social problem in 1969-70, and "what they accomplished at the level of arousing public awareness is close to miraculous in bringing to citizens scientific and social knowledge heretofore known only to a few experts," in the words of an Environmental Protection Agency Official. Since the initial peak, quantitative coverage of environmental issues has declined. For example, total column inches of environmental news in sampled issues of the New York Times rose precipitously from 119 in 1962 to 1259 in 1970, and then declined irregularly to 683 in 1977. The Chicago Tribune shows a similar trend. It is likely to stay at about the present level. While the "newsness" of environmental problems may have worn off somewhat, recent legislation like the National Environmental Policy Act and new federal and state environmental protection agencies prompt sustained coverage. The environmental reporter is not without his problems: the shortcomings of biased public agencies and private experts as news sources, the bias of the reporter himself, the political and economic pressures that accompany environmental disputes, the highly technical data that can easily be lobbed over audience heads, and the pervasive problem of making a coherent whole of concensus trade-offs out of bits and pieces of conflict. Despite such problems, a new breed of sophisticated environmental newsperson seems to

be doing a better qualitative job, eschewing yesterday's sensationalism for more measured investigative reporting.

Perhaps nothing so typified the irruption in environmental communication in recent years as the rash of specialized journals with the magic words "environment" or "environmental" in their titles. Some have faded from the scene, but those that remain represent a hard core of custom environmental communication media. Environmental education, for example, now has journals devoted to various aspects of research and development in ecological communication: The Journal of Environmental Education, Environment and Behavior, and Environmental Education Report. Counter-culture activists on the left have Environmental Action; card-carrying scientists on the right have The Journal of Environmental Quality, to name only five of a genre that represents the secure place environmental communication occupies today in the total media information system.

Government Agencies

All three branches of government at all levels engage in environmental communication today. Federal, state, regional, and local bureaus of conservation, environmental protection, and land management have broadened their communication efforts in both scope and depth. Whereas yesterday their public messages were aimed primarily at boosting the particular roles of the various bureaus, today there is a growing acceptance of the particular interdependency of all conservation problems and programs, and a recognition of the compelling need for broad public understanding of that interdependency. Even the U.S. Army Corps of Engineers is engaged in a remarkable communication campaign aimed at involving the public actively in river basin planning.

Congressional and state legislature speeches and hearings today often constitute environmental communication of the most primary kind. The current debate over the reorganization of the federal resource management establishment is a case in point. Decisions by federal and state courts also add to public knowledge about environmental issues; for example, in evaluating the solvency of environmental impact statements.

Societies and Organizations

Communication is the life-blood of the many and varied professional and voluntary associations that in turn are the life-blood of the environmental movement from the Potomac to Pocatello. Without public awareness, interest, and support, environmental action organizations could not exist, much less carry on effective programs. So communicators play leading roles in, and frequently direct, America's array of grass-roots alliances and Washington lobbies. By their very nature, such organizations frequently tend to be single-issue oriented and their communications hence are not always particularly ecological, but with few exceptions they do reflect a more comprehensive view of the environmental imperative than was the case a generation ago. For example, mark these current words from the National Wildlife Federation: "Conservation is no longer just the story of vanishing wildlife and vanishing wilderness areas.

There is a new urgency in the word today. Suddenly, as we stop and look at our total environment, the word has taken on the meaning of human survival."

Resource Industries

The resource industries have been in the conservation communication business for a long time via all manner of institutional advertisements, films, and manuals. While many of their messages admittedly were self-serving, the fact that Smokey (sic) Bear and contour plowing have been the universal symbols of conservation is testimony to the effectiveness of the campaigns of lumber companies and farm implement manufacturers.

The population-pollution-pesticide era initially caught industry off-base, and we saw a good many "backlash" messages, in the extreme the manner in which chemical manufacturers savaged Silent Spring. But today the resource industry voice is much more statesmanlike: "Yes, there is an environmental problem, and we're part of it, but we're also part of the solution; we believe we can learn how to mesh resource extraction with environmental protection, so keep faith in us and the future." A recent study of oil and forest industry corporate image advertising, for example, suggests that, far from contaminating the essential concepts of environmental education, the oil and forest industries have in fact been captured by the environmental movement, at least as measured by their messages in national magazines.

The environmental communication record of organized labor has likewise been a mixed bag. At the national level, leading labor men and their money have played key roles in environmental education. At the local level, however, where the crunch between ecology and economics can be keenly felt, unions frequently line up on the opposite side from environmentalists. So long as the most endangered species in America is the Detroit auto worker, labor's position on environmental issues will be as excruciating to develop as it is pivotal to any kind of social and scientific entente on environmental affairs. More than in laboratories or legislatures, the next chapter in environmental communication may well be written in union halls.

Institutions of Higher Education

Professors and students helped shape the environmental movement, and now environmentalism is re-shaping the university. The history of higher education may offer no more telling example of the interplay of life and learning in America. Invariably the early-warning-radar voices of environmentalism were those of university professors. As Aldo Leopold once wrote, ecologists live in a world of wounds, and in the early 1960's they began to cry out in force, and not just card-carrying ecologists either. What these university professors didn't have in common was a discipline; they represented a range of sciences, social studies, letters, and professions. Yet they invariably shared one characteristic: they were relatively senior, tenured faculty, secure in the campus power structure, and hence free to wander outside their

specialties, engage in some holistic thinking, and coalesce around what Paul Shepard called "the subversive science" of a new human ecology which began to call into question whether old-fashioned "progress" was in fact our most important product.

Given cognitive substance by professors, the environmental movement drew its affective processes from university students. Honed to a knife edge by free-speech confrontations, civil-rights marches, and anti-war riots, campus youths of many stripes seized on "ecology" as the newest manifestation of the basic anti-materialism that was their hallmark in the mid-1960's, climaxing in a nationwide campus teach-in on "Earth Day," 22 April 1970.

Barring English composition and math, few university subjects are being offered today in so many diverse ways and places, by such a mixture of colleges, departments, and faculty, as that complex of ecology, economics, energy, engineering, esthetics, and ethics known, precisely or not, as environmental studies. No self-respecting campus is now without some gesture toward environmentalism, and the more substantial enterprises represent a major departure in university focus and format toward multidisciplinary, multi-function, problem-oriented teaching, research, and outreach. What is more, the impact of an environmental influence has actually changed the administration and management of the university, and may even yet change the common life within the university.

It is striking the depth to which environmental studies concepts have penetrated the academic structure--wholly new instructional curricula and organizational arrangements at the undergraduate level, wholly new master's degree programs, wholly new cross-discipline PhD research arrangements, wholly new extension configurations. While in some cases the changes may prove to be more semantic than surgical, there is little doubt the impact of environmental studies will long be in evidence on the broad physiognomy of the campus.

All elements of the genus environmental studies are conscious, to greater or lesser degree, of an outreach, adult education, or public service mission, however defined. The outreach dimension has recently received a big shot in the arm from the formation of the federal Department of Energy's National Energy Extension Service, fully funded in April 1979. Ten pilot programs are already in being. One such, for example, includes in-home consultation on conservation techniques in a low-income neighborhood, workshops on the safety and efficiency of woodburning stoves, research and education in fuel economy for haulers of farm products, insulation advice for the tourism industry, workshops for local government officials, instruction for professionals like architects who influence energy consumption, an information service for the mass media, a demonstration solar house, and an experimental alcohol-powered auto.

Environmental studies programs in far-away places with strange-sounding names may mask the real curricular impact of the environmental movement on American colleges and universities next door--the subtle

influence of environmentalism on the warp and woof of traditional schools and colleges within a university, breaking down barriers among conventional disciplines to produce cross-discipline undergraduate classes and graduate research seminars. While some of that influence may have resulted only in cosmetic changes in course descriptions and college catalogs, the evidence suggests a reasonably profound and relatively rapid adjustment of substantive offerings to the impulses of the environmental decade. To be specific, at one representative university, course titles with an environmental tilt have risen in number by 443% between 1966 and 1976, not even counting the obscure changes in the contents of courses sans changes in titles.

Unquestionably, then, environmental studies have had a measurable impact on the campus. For undergraduates they have offered an air of relevance to the higher learning. For graduate and professional students, they have provided entres to new careers in both the public and private sectors. For faculty, environmental studies at their best have broken down the ivy curtains that had tended to shroud each discipline and its approach to researchable issues. For administrators, environmental studies have provided a nudge to rethink campus configurations, explore new outreach activities, and practice energy conservation.

The role of the university in the energy crisis—both as a research institution and as a catalyst for change in architecture, community planning, and conservation techniques—may be crucial to a national energy policy. In turn, the demands of energy conservation will have a profound impact on the university. An Energy Task Force sponsored by the American Council on Education has already developed an energy management field manual as a guide to how the campus can play the role of good citizen--and save money.

Whatever the level of enterprise, President Robert C. Good of Denison University believes professors and students of environmental studies need certain skills: skill in the analysis of complex interactive systems, long-term effects, linkages of factors, and the worldwide consequences of local decisions and actions; skill in the historical analysis of the human perceptions, attitudes, and idealogies that can complicate the application of scientific knowledge to the solution of environmental problems in differing economic and political systems and in differing cultures; skill in the analysis of values and in rendering moral judgments; in recognizing, for example, that growth and progress are not necessarily synonymous; and skill in personal involvement in problem- and policy-oriented interdisciplinary action befitting a literate citizen of a beleaguered planet.

It has been said it is easier to move a cemetery than to move a university faculty, and it has also been said, of course, the campus is an ivy tower with no measurable impact on the outside world. The university-environmental movement marriage gives the lie to both statements. For having exchanged those vows in 1968-1978, neither higher education nor the country will ever be the same again.

Other Educational Instrumentalities

In some ways, even more striking than the university-environmental movement marriage has been the proliferation of educational materials to support environmental instruction in the elementary and secondary schools. Prior to 1968 the subject of conservation was largely confined to the last chapter of the ninth-grade science text. Today the problem of the alert classroom teacher is one of digging out from under a deluge of exciting new study guides, field manuals, and film strips, and not-so-exciting administrative rhetoric.

The less formal educational institutions--such as libraries, museums, youth organizations, civic groups, and so on--are likewise the sites of stepped-up environmental communication. Indeed, the environmental movement has brought about the recrudescence of that special educational agency, the nature center. Various types of such centers are bringing a capsule view of spaceship earth to thousands of citizens around the country.

The largest and in many ways the most effective informal adult education activity in the United States is the agricultural extension service, epitomized by the "ag agent" in virtually every county seat in the country. Where once he was promoting pesticides, wetland drainage, sod-busting, and other deleterious farm practices, today the county agent is starting to develop lines of communication with community conservation commissions, lake protection associations, and other public and private environmental groups; and he is being backstopped by an increasing array of environmental communication materials emanating from the land-grant colleges.

Recent studies show that approximately three out of every five American adults engage in one or more educational programs of some type or other after completing their formal education. To serve this waiting audience with sophisticated environmental messages, new communication technology is emerging: state ETV networks, video-cassettes, and cable television, to name some of the most notable in being or on the horizon.

Even more intriguing, the possibility in the next fifteen years of the nation wired to coaxial cable with a two-way capacity promises to improve the level of public knowledge on environmental problems. The so-called Home Information Utility will permit individuals to command such computer-stored resources as a complete index of library information on any given environmental subject, with complete texts of books and articles, if desired; a listing of pending bills, hearings, and decisions; background information on a breaking news event; the ability to monitor a public meeting; consumer information; and the opportunity to register an opinion instantaneously in a local or national referendum on an environmental issue.

On the global front, a satellite-based community TV network for less-developed nations as large as India could conceivably become operational

by 1981. Provided that the government of the receiving country cooperates, such a TV network would make possible direct transmission of programs from a so-called advanced nation into community receivers appropriately modified. The possibilities are challenging, to say the least, for a vastly broader environmental communication ecosystem.

In summary, through the long course of history in this country, communication has been a hand-maiden of environmental education. Today, perhaps more than ever before, the environmental educator at all echelons can draw on various media for insight and even inspiration.

THE UPSHOT

Does all this environmental communication do any good? Communication research generally shows a positive relationship between communication media exposure and level of knowledge. But research also suggests that level of knowledge about a resource management issue may be inversely related to an ecological attitude on that issue when economic self-interest or some other stance intervenes.

If attitudes are not necessarily related to knowledge, long-term communication research also indicates (a) that salient attitudes are usually not subject to manipulation through short-term communication programs, and (b) that attitudes are unreliable predictors of actual behavior.

As far as that goes, is it not an ethical question whether environmental communicators should even be trying to change public attitudes and values, particularly if they are using public funds? Where does environmental education stop and brainwashing commence? Is it not, rather, that they should strive to bring rationality to environmental decision-making under the concept that environmental misuse and exploitation result in intolerable social costs? They certainly can seek to inform publics about tradeoffs available between competing values so that citizens can offer opinions based on their interests, but to try to go beyond that raises fundamental questions of scientific validity and moral integrity.

So where does all this leave us? Is environmental communication the journalism of futility? Can no one really change? Can a nation of go-getters cool their conspicuous consumption? Can a flow of environmental information have some impact?

That an individual can change there is some anecdotal evidence. Here, for example, are the words of a wildlife expert in the Southwest, vintage 1919:

> We have to understand the real destructiveness of predatory animals on game...No refuges or regulation of game kill will get us anywhere unless these predators are cleaned out...It is going to take patience and money to catch the last wolf or lion in New Mexico, but the last one must be caught!

And here are the words of a wildlife expert in 1949:

> The cowman who cleans his range of wolves does not realize that he is taking over the predator's job of trimming the herd to fit the range. He has not learned to think like a mountain. Hence we have dustbowls, and rivers washing the future into the sea...Perhaps this is behind Thoreau's dictum: in wildness is salvation of the world. Perhaps this is the hidden meaning in the howl of the wolf, long known among mountains, but seldom perceived among men.

The writer in both cases--Aldo Leopold. Something obviously happened to Aldo Leopold in those 30 years. He called it the arrival of an "ecological conscience." Environmental communication as education could have played a role.

That a society as a whole can change there is also some objective evidence. Like the civil rights and Vietnam protest movements before it, the environmental movement has had its successes. You may call them picayune or you may call them impressive, depending on your perspective, but it cannot be denied that environmentalists do have a batch of victory medals on their chests. Great or small, the successes breed the sort of confidence it takes to keep any movement going. For example, environmentalists in action have led directly or indirectly to modifications, delays, or halts to assorted dams, canals, power plants, roads, ski resorts, golf courses, oil leases, pipelines, jetports, insecticides, and SST's; have spawned some 30 state environmental policy acts; have reformed public participation in policy formation, particularly on the part of the U.S. Corps of Engineers and the USDA Forest Service; and have implanted environmental studies programs in just about every college and university in the country.

Russell Train, former head of the Council on Environmental Quality, thinks the future of the environmental movement will depend on reconciling environmental, social, and economic goals; on shifting from pollution control to pollution prevention; and on "the general public's commitment to environmental protection."

What in fact do public opinion polls tell us?

Drawing on results of 1977 Gallup polls, Sierra Club head Mike McCloskey believes a public commitment to environmental protection has been "consolidated by the majority into an enduring American value." And after contacting opinion leaders around the country in 1978, Edward K. Delong of the United Press concluded in a series of newspaper dispatches that "the environmental establishment may turn out to be the single most powerful force shaping the lives of Americans for years to come." He points out that "pollution control spending alone from 1976 to 1984 could exceed $554 billion--20 times the cost of the space program."

A 1979 Wisconsin study indicates eight out of 10 persons in that state are still "very" interested in their environment, and nearly seven out of 10 believe taxes should be used to fund environmental information programs. Interestingly, finding and asking a specialist or attending a

course are not preferred ways to get environmental information, the study showed. Most respondents get their environmental information from newspapers, radio, television, or conservation magazines, and they put the information to practical use in their homes, on community issues, on their jobs, and in recreational pursuits.

A recent definitive national survey sponsored by Resources for the Future indicates that public support for environmental protection indeed remains strong. The RFF study was designed to make as rigorous a test as possible of the hypothesis that "environmentalism is an enduring concern." The interviewing took place in 1978 just weeks after California voted for Proposition 13 by a 2-to-1 margin, and the media declared the "tax revolt" to be spreading across the country. During the interview period, the inflation rate topped 10 percent, and the well-publicized multimillion dollar Tellico Dam stood uncompleted because of a diminutive but endangered snail darter. The results of the survey are striking. RFF reports that "although the respondents are deeply concerned about inflation and taxes, their support for environmental protection is strong and unwavering, and their sympathy with the environmental movement is at a high level, with no sign of a backlash."

More specifically, a California sociologist, Joachim Wohlwill, has just found that, at least in the case of a recent referendum on a coastal zone regulation act, "support for an environmental protection measure cut across a wide spectrum of society," despite earlier sociological research that suggested environmentalism was just an upper-middle-class, Democratic, if not an elite, social movement. So maybe time is on the side of environmental communication.

If anything really speaks to the effectiveness of environmental communication, it is the evidence from a recent study that, for many young people participating, Earth-Day was not a momentary fling but an introduction to life careers in environmental action. It is incalculable, the effect of the presence of this maturing cohort in the crossroads and cosmopolitan centers of the country. As they move up the ladder of community involvement, these citizens can increasingly lend an environmental tilt to resource management decision-making.

What was the single most effective environmental communication device or message of the past period?

Rachel Carson's Silent Spring in 1962 is often described as the firebell in the night that first alerted America to environmental hazards. It did that, but it was essentially a single-issue approach. Lynton Caldwell's "Environment: A New Focus for Public Policy," in Public Administration Review in 1963, was a landmark paper, but it reached only a scholarly audience. So did the "Future Environments of North America" symposium in 1965. A unique joint House-Senate colloquium on "A National Policy for the Environment" in 1968 prodded Congress but received minimum press coverage. Big coverage of the Santa Barbara oil spill in 1969 some sociologists have said triggered massive environmental concern, and other sociologists attribute the rise of a public environmental awareness to Earth Day and its associated mass media splash.

But perhaps the single most effective environmental communication message of the century was totally inadvertent—the 1969 view from the moon of a fragile, finite spaceship earth, fulfilling the description of Adlai Stevenson a decade before, that here we are, partners on a very small planet, with nothing between us and infinity but what we have and make of it. It was a powerful visual message, indeed, and Walter Cronkite and the CBS Evening News riveted it in our minds. By conquering the frontier of outer space we had discovered another frontier—the search for a state of harmony between humankind and the only earth we have.

Regardless of which of these devices or messages you consider the more compelling, you will notice they are all examples, not of environmental education in any formal sense, but of environmental communication as education.

APPLICATION AND INQUIRY

Since public attitudes and actions are at the core of the problem of defining and maintaining environmental quality and resource quantities, resource managers particularly find themselves involved in various programs of communication with many publics:

1. Publicity programs to inform potential and present consumers about resource options;

2. Interpretive programs to broaden and enrich the experiences of visitors;

3. Visitor communications to help control user impact on the environment;

4. Community relations programs to win public consent for specific projects or policies;

5. Public relations programs to build broad support for general agency needs and goals;

6. Education programs to reinforce local and regional lay individuals and groups charged with environmental housekeeping and energy conservation;

7. Environmental information programs to engender an ecological conscience on the part of the public at large;

8. Plans of action in crises and controversy, such as the current debate over energy policy.

All of these programs involve environmental communication focused on developing a conservation ethic that will protect natural amenities without penalizing appropriate use, and that will develop natural resources without destroying them. In manifold daily contacts, then, the resource manager in the field faces such questions as these:

1. What are the ecological concepts that must undergird the engineering of public consent for rational resource use?

2. What are the socioeconomic factors that condition resource management today?

3. What are the educational principles and communication practices that hold the most promise in conservation?

4. How, in essence, can the resource manager best contribute to the perceptive faculty in Americans--the only true "development" of American natural resources?

Research is needed, then, to help improve the ability of resource managers at producing a citizenry that is knowledgeable concerning problems that affect our environment, understands how to be effective in helping to solve these problems, and is motivated to work toward their solutions. In general, we must be concerned with a broad consideration of the human realities that affect the wise management of natural resources today. Specifically, we must inquire into the biopolitical organizations, economic stresses, social values, and esthetic perceptions that condition the quest for environmental quality; assess the critical factors in translating ecological concepts into action programs on the landscape; examine public relations processes by which resource management policies are crystallized; and refine communication techniques designed to build public interest, understanding, and support for rational resource use and conservation.

These are the broad questions to which research in environmental communication can be devoted. Primary goals might be to (a) relate new basic research techniques and findings in the social sciences to the practical problems of the resource manager, and (b) build a body of applied knowledge respecting publicity, public information, public relations, interpretation, and education for conservation. There are many points of departure, methods, and goals that suggest themselves in the broad area of environmental communication research: historical, descriptive, analytical, experimental.

Meriting and winning public support is at the heart of the quest for environmental quality and energy conservation. How better to do this is the rationale for research of intellectual fibre and field application in environmental communication.

GOING FROM HERE TO THERE

Environmental communication as herein delineated is a phenomenon of the decade 1969-1979, a current fact, not a fad. By increasingly common consent, it is "a good thing" to engage in environmental communication. But exactly wherein lies the "goodness," and what can be done to encourage its pursuit? On such questions there is much confusion of counsel, and only the most uncritical minds are free from doubts.

Accompanying the irruption in environmental communication has come a modest attempt by scholars and practitioners in a variety of disciplines and agencies to study environmental communication quantitatively or to make qualitative evaluations of the state of the art. To further that research, development, and application, this annotated Bibliography attempts to pull together for the first time all the pertinent papers or passages that have been published in the 10-year period in journals and books of credibility. Manifestly, some of the citations may be peripheral while others may have escaped our reconnaissance. Nor do we attempt to analyze data or views presented in terms of their rigor or solvency. To refine this initial effort we invite comments, criticisms, corrections, additions, and deletions from the country-wide environmental communication community to whom this Bibliography is dedicated. A revised edition is contemplated.

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Environmental Communication Literature Review:

Strategy and Tactics

STRATEGY AND TACTICS

We compiled this Annotated Bibliography to aid students, teachers, journalists, and resource managers seeking literature on environmental communication.

Our objective was to review articles and books about or related to environmental communication published between January, 1969, and December 1979--the so-called "environmental decade."

The following discussion outlines the definitions of "environment" and "communication" used to select literature and describes the literature search. We then describe abstracting guidelines and the format used to arrange the abstracts and references. A listing of key words indexing the entries follows the discussion.

EXPLICATION OF THE TERM "ENVIRONMENT"

The meanings we applied to the concept "environment" strongly reflect the objects and concepts of interest to communicators.

It is generally agreed that the meaning of "environment" encompasses and transcends the meaning of "conservation." Describing the various meanings applied to "conservation," Shomon (1959) noted disagreement over whether conservation included human as well as natural resources, and concluded that "something is happening to the scope of conservation in America--a changing set of attitudes which history alone, when it is written, will disclose." "Environment" embodies this change.

We defined "environment" as interactions and relationships between natural resources and human resources. Natural resources are defined as non-man-made elements that humans use and perceive as valuable. We limited these elements to air, water, minerals, energy resources, fish and wildlife, and land and its associated resources of soil, forests, and grasses.

Human resources are defined as the capabilities of individuals and the social systems through which society interacts with natural resources.*

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* It was previously stated that "environment" concerns human-environment-technology relations. We excluded literature concerning communication solely about technology because a recent bibliography, The Communication of Technical Information to Lay Audiences (Bowes, et al., 1978) covers the communication of complex, technical information in considerable detail. For the same reason, we excluded literature concerning communication solely about science and nuclear energy.

Shomon outlines human resources as follows:

a. Personal, individual resources (inherited and acquired skills, capabilities, attitudes, etc.).

b. Institutional resources (organizations, both formal and informal, public and private).

We have stated that, for our purposes, environment means interactions and relationships between human resources and natural resources. The interactions and relationships of interest to communicators are those likely to comprise the content and nature of environmental communication.

To identify these interactions and relationships, we adopted a social problems perspective, which basically means we assumed that the bulk of environmental communication concerns natural resources problems and social issues arising from interactions between human and natural resources.

We primarily relied on the 1977 Annual Report of the President's Council on Environmental Quality (CEQ) to identify these key problems and issues. The federal government was the first institution to recognize and address human resources/natural resources issues raised by environmentalists (Morrison, et al., 1972; Schoenfeld, et al., 1979). Since it was formed in 1970, one of the CEQ's main functions has been to issue annual reports summarizing environmental problems and activities underway to resolve them nationwide.

We therefore decided this document would probably reflect the actual content of environmental communication--the activities of individuals and social systems that contribute to and help resolve natural resources problems and related social issues.

Based on our understanding of this document, we defined environment as concerning:

a. The preservation, management, and development of natural resources.

b. The quality and quantity of natural resources and the influence of social systems and individuals on these conditions.

c. Legislation, regulations, and judicial rulings affecting natural resources.

d. Public decision-making regarding appropriate use and management of natural resources.

e. The impacts of environmental conditions on humans' lifestyles, and physical, psychological, and economic well-being.

f. Consumptive and non-consumptive outdoor recreation and natural resources appreciation.

Of the characteristics of individuals previously identified, only behavior was addressed by the CEQ report. A basic tenet of communication research is that human knowledge, motivations, and attitudes are related to human behavior. More recently, communication research has focused on the behavioral influences of social and situational forces. We therefore included as a final component of our definition:

g. The intrapersonal and social characteristics of individuals and structural and situational conditions associated with natural resources problems and related social issues.

EXPLICATION OF THE TERM "COMMUNICATION"

To identify the major processes and components involved in communication, we relied heavily on definitions of communication by Hanneman (1975) and DeFleur and Ball-Rokeach (1975), a model depicting communication of science and environmental information developed by Witt (1973), and an analysis of the societal functions of information control by Donohue, et al. (1973).

We defined communication as the processes and effects involved in information exchange between social systems active in environmental communication and members of the general public.

The preceding discussion of the environment identified the major social systems involved in environmental communication. By "general public" we mean persons who do not normally have direct access to or expertise in evaluating environmental information.

We developed the following composite of definitions reflecting traditional areas of communication research and components and processes of particular importance to the communication of environmental information. Hence, communication herein is defined as concerning:

a. The communication behavior of social systems and professional communicators. Includes actions and decisions that determine the quantity, source, and nature of information transmitted, such as selecting, rejecting, and shaping information. Includes identification of specific publics to receive information and the development and implementation of techniques to reach these publics. Includes actions and decisions that influence the quantity, source, and nature of public input and feedback into the system.

b. External and internal forces and conditions that influence the communication behavior of systems. Includes relations with and actions by other systems or the public. Includes functions and dysfunctions of alternative communication behaviors.

c. Quantity, diffusion, and nature of information transmitted through mass and interpersonal channels. Includes quantitative and qualitative characteristics of information. Includes the spread of information through social systems over time.

d. Professional characteristics and evaluations of communicators. Includes professional attributes and value judgements regarding communication of persons specializing in the field and those who communicate with the public as an adjunct to their professions (foresters, planners, etc.),

e. Methods and channels used to disseminate and obtain information. Includes public participation techniques and types of mass and specialized media. Includes interpersonal (face-to-face) and mass (mediated) channels.

f. Communication behavior of individuals, audiences, and groups within the general public. Includes information seeking, information sharing, information processing, and media use.

g. Effects of communication on receivers' cognitions and behaviors. Includes awareness, knowledge, opinions, attitudes, and values. Includes individual problem-solving.

h. Effects of communication on relations between sources and receivers and the resolution of problems through coordinated group efforts. Includes similarities and differences between sources' and receivers' cognitions. Includes consensus, conflict, and group decision-making.

LITERATURE SEARCH PROCESS

We restricted the literature search to journals published in the United States. With the exception of a few articles from the authors' files, we abstracted only articles published in refereed journals.

Having decided to compile a multi-disciplinary bibliography, we conducted a search of the ERIC computerized information retrieval system. We also reviewed bibliographies on mass communication, environmental sociology and social psychology, environmental politics and planning, and conservation. These bibliographies are listed at the end of this report. We also included articles from our own collections.

To locate additional articles, we conducted an independent literature review based on the following procedures:

(1) Identified all journal-sources of articles obtained from the ERIC search and bibliographies.

(2) Identified all journal-sources of articles in our files and all journal-sources of references to environmental communication in these articles.

(3) Mailed a description of the project and a questionnaire listing the 144 journals identified in the two preceding steps to 177 University

of Wisconsin-Madison professors.* For each journal they were familiar with, respondents were asked to judge whether it was a "definite," "likely," or "unlikely" source of articles about environmental communication. Respondents were also asked to suggest additional journals. Forty percent of the sample (n=60) returned usable questionnaires.

(4) Assigned values to the responses (higher values indicating greater likelihood), computed a score for each journal, and ranked journals in descending order.

(5) Reviewed all 1972-75 issues of the 38 top-ranked journals and abstracted all relevant articles.

(6) Reviewed and abstracted relevant articles in all remaining 1969-79 issues of all journals containing a minimum of four articles in the 1972-75 period. These journals are Journalism Quarterly, Journal of Environmental Education, Journal of Forestry, and Natural Resources Journal.

(7) Noted all references to environmental communication in the abstracted articles and reviewed and abstracted relevant references.

(8) Repeated the process of noting and checking references in abstracted articles until all new references were exhausted.

ABSTRACTING GUIDELINES

We did not attempt to evaluate the strengths and weaknesses of the authors' research methods, conclusions, or arguments, or the applicability of their proposals. Within limits imposed by the articles' contents, we did, however, try to provide adequate information for the reader to make some assessments. Each abstract contains the following information:

(1) Conceptualization: The theoretical or practical problem discussed and the author's viewpoint.

(2) Methodology: The type of study, size and type of sample, and methods used to gather data.

(3) Findings: Major results and any qualifications the author places on these results.

(4) Conclusions: The author's interpretation of the findings, and generalizations, predictions, and inferences. Also includes proposed solutions and actions.

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* The respondents teach courses in the physical and social sciences that the UW-Madison's Center for Environmental Communication and Education Studies recommends for graduate students in environmental communication.

FORMAT

Each abstract is divided into the following sections:

(1) Sequence Number: Abstracts are arranged alphabetically, by the primary author's last name. A number, beginning with the number "1," precedes each abstract. Sequence numbers are keyed to the index preceding the abstracts.

(2) Citation: A full citation, including authors' names, publication date, article title, journal title, volume, number, season, and page numbers follow each sequence number.

(3) Abstract: Abstracts vary in length, reflecting our judgments of the amount of information the reader needs to determine the utility of the article for his or her interests.

(4) Key Words: Key words and phrases used to index the abstracts follow each abstract. Many abstracts are indexed by more than one key word. Key words are sometimes used to reflect information in the article not included in the abstract.

BOOKS

Books selected for abstracting were those in the library maintained by the UW-Madison's Center for Environmental Communication and Education Studies. Several of the abstracts are chapters from collections of writings.

Book abstracts follow the abstracts of articles and are arranged alphabetically, and in the same format.

REFERENCES

Following the environmental communication journal article and book abstracts is a list of the references searched in compiling this Bibliography.

ACKNOWLEDGEMENTS

Students in the Spring 1979 Inter-College 860 seminar, "Environmental Information and Education Programs," assisted in conducting the literature search. Karen Diegmueller and Dan McDonald, graduate students in the School of Journalism and Mass Communication, assisted in abstracting books. Prof. Lloyd A. Bostian, Department of Agricultural Journalism, College of Agricultural and Life Sciences, provided valuable strategic guidance.

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Journal Abstracts

1. Allen, George. 1972. "How Deep is Environmental Awareness?" Journal of Environmental Education 3(4): 1-3.

Following an Environmental Awareness Week and two-day Earth Fair held in Eureka, California, university students interviewed a non-probability sample of 148 persons to explore community awareness and reactions to the events. About two-thirds of the sample knew of each event. College-aged respondents (n = 27) showed greatest awareness of and attendance at the fair.

(environmental events, knowledge, surveys)

2. Althoff, Phillip; Greig, William H.; and Stuckey, Francine. 1973. "Environmental Pollution Control Attitudes of Media Managers in Kansas." Journalism Quarterly 50(4): 666-672.

Examined environmental opinions of Kansas media managers and their media's pollution coverage and related editorial policies. Of the questionnaires mailed to all state broadcast media and daily newspapers, and all weekly newspapers in eight randomly selected counties, 104 or 63 percent of the managers responded. Although a majority viewed pollution as a real rather than political issue and supported Kansas' environmental standards, their media's pollution coverage and editorial policies did not reflect these views: approximately one-third of the media had a consistent editorial policy regarding pollution, but how such policies were implemented was unclear. One-fourth encouraged recruitment of polluting industries and two-thirds accepted advertising from known polluters. With the exception of television and full-time radio stations, the media tended to cover less than 10 pollution stories per month.

(advertising, media coverage, media policy, surveys)

3. Amir, Shaul. 1972. "Highway Location and Public Opposition." Environment and Behavior 4(4): 413-446.

A case study of citizen opposition to the construction of a New York state expressway. Describes the activities of a group that opposed the highway for its effects on the area's natural beauty. Illustrates techniques used to build the organization and sustain the issue over a six-year period. These techniques included establishing and maintaining a communication network among citizens, community leaders, and the group's central committee, publicizing the issue through the mass and specialized media and public meetings, and capitalizing on public relations errors of the planning agency. Suggests the controversy erupted because the planning agency did not provide meaningful public participation opportunities.

(environmental groups, natural resources planning, public participation)

4. Bailey, George Arthur. 1971. "The Public, the Media, and the Knowledge Gap." Journal of Environmental Education 2(4): 2-8.

Studied the diffusion of information about Earth Day in Madison, Wisconsin. Conducted telephone interviews with random samples of 160 persons five weeks prior to the event and 119 persons one week after E-Day. Defined level of information as knowledge of: 1) what the "E" in E-Day meant, and 2) the date of the event. In general, educated, young, professional, and politically active respondents were more knowledgeable before and after the event. In both samples, persons aware of the event most often cited newspapers followed by conversations as their information sources. Concludes that information about E-Day was primarily obtained by educated elites.

(diffusion, environmental events, information gain)

5. Bavec, Nancy; Broom, Glen M.; and Schoenfeld, A. Clay. 1979. "The Environmental Education Voice of the Oil and Forest Industries." Journal of Environmental Education 11(2): in press.

Reports results of a content analysis of 305 randomly selected advertisements by the oil and forest industries in four national magazines from 1958 through 1977. Found the percentage of ads promoting consumption declined while ads promoting the corporate image, primarily by emphasizing the industry's role in solving environmental problems, increased over the study period. Ads discussing present industry actions and future policies needed to solve environmental problems also increased over the study period. Suggest that at least as reflected by their advertisements, these resource industries are responding constructively to environmental issues.

(advertising, content analysis--magazines)

6. Belak, Edmund R., Jr. 1972. "The Outdoor Magazines Revisited." Journal of Environmental Education 4(1): 15-19.

Analyzed environmental content in Field & Stream, Outdoor Life, and Sports Afield. Randomly selected articles from issues representing each month or season from 1968-70 and, for historical comparison, 1908 and 1934. In addition to categories used in a previous study (see Clausing, J., 1971), coded information concerning environmental improvement. In 1908 and 1934, content focused on wildlife conservation, particularly on the need for protective legislation and research funds. From 1968-70, magazines emphasized fish and game in rural, multi-regional areas of the interior United States. Also stressed resource quality, public action, nonprofit solutions, and humanistic values. The average number of references in the content categories per sampled article increased from 7.8 in 1969 to 9.4 in 1970. Despite the trend toward increased environmental coverage, magazines maintained a traditional focus on wildlife conservation and, in general, did not cover problems of air, water, and land resources, or the urban environment.

(content analysis--magazines)

7. Borton, Thomas E. and Warner, Katherine P. 1971. "Involving Citizens in Water Resource Planning: The Communication-Participation Experiment in the Susquehanna River Basin." Environment and Behavior 3(3): 284-306.

In an effort to learn more about means to improve the interchange of ideas between public and planners during public participation activities, research was undertaken to experiment with new techniques. The opportunity was presented by the occasion of the Susquehanna River Basin Comprehensive Water Resources Planning Study, a joint effort of the U.S. Army Corps of Engineers and the State of New York. The study was divided into two main objectives: (1) study procedures and techniques to improve two-way communications and to provide opportunity for citizen involvement, and (2) devise evaluation procedures to gauge the impact of the communication-participation techniques. The researchers conclude the need for and usefulness of broader, more effective participation programs in enhancing the quality of water resource planning.

(information programs, natural resources planning, public participation)

8. Bowes, John E. 1977. "Stereotyping and Communication Accuracy." Journalism Quarterly 54(1): 70-76.

Investigated the effects of stereotyping of resource agencies by citizens on their ability to accurately judge the agencies' views on local energy development needs. Interviewed a stratified random sample of 310 citizens plus 40 community leaders in a North Dakota community. Questionnaires were returned by 78 personnel (83 percent response) in six resource agencies overseeing energy development planning in the area. Stereotyping, an oversimplified belief that ignores unique attributes of an object, was conceptualized as a process in which homogenization (applying similar attributes to an object) precedes polarization (applying similar, extreme attributes to an object). These stereotyping dimensions were measured by having leaders and citizens rate positive and negative characteristics of agency performance. As predicted, homogeneity was positively and polarization negatively related to accuracy, but for leaders only ($p < .05$). Leaders polarized agency performance on positive characteristics only and positive, polar stereotyping increased with general agency contact and local press use. The only information source significantly related to stereotyping by citizens was agency contact, which reduced homogeneity ($p < .05$). Suggests leaders' polar, positive support for agencies diminished their ability to judge agency priorities and questions the quality of information leaders transmit to the public.

(information sources, natural resources planning, public-resource agency relations)

9. Bowes, John E. and Stamm, Keith R. 1972. "Communication During an Environmental Decision." Journal of Environmental Education 3(3): 49-55.

A survey of North Dakota residents affected by a flood control project proposed by the Army Corps of Engineers obtained three measures of communication effectiveness: 1) awareness of the proposal, 2) knowledge of how the project might affect the respondent, and 3) the extent to which citizens thought they knew the planning agency's views of the project's effects. Interviewed all rural residents near the proposed reservoir, community leaders, and a random sample of village residents, for a total sample of 262 persons. Of the sample, 63 percent knew of the proposal; over 40 percent learned about it through the media or interpersonal conversations. More of the respondents perceived the project's benefits than its disadvantages. For seven of the ten potential effects of the project, respondents who viewed the effect as a disadvantage were significantly more likely than those who viewed it as a benefit to be undecided about the agency's views. Results suggest the Corps inadequately communicated its views on the project's potentially negative effects. Local media also emphasized the positive aspects and covered negative aspects only after rural residents vocally opposed the project.

(information sources, knowledge, media coverage, media use, natural resources planning, public-resource agency relations, surveys)

10. Bowes, John E. and Stamm, Keith R. 1979. "Science Writing Techniques and Methods." Journal of Environmental Education 10(3): 25-28.

Reviews research on the communication of scientific and technical information. The bulk of current studies concern audience attitudes, diffusion, and the cognitive and behavioral effects of communication. Source/receiver relations including linkages between reporters and scientists, and agencies, citizens, and community leaders have also been studied. The following topics need further research: the assumption that behavior results from attitude shifts caused by messages, the antecedents of communication, writing methods and strategies to improve the lay person's understanding of science, reporters' ability to interpret science, and the effects of situational factors on communication.

(review--science communication)

11. Bowman, James S. 1977. "Public Opinion and the Environment." Environment and Behavior 9(3): 385-416.

A survey of 325 University of Wyoming freshmen found strong environmental concern, despite the salience of other issues. Nearly one-half of the sample blamed consumers for environmental problems. Forty-five percent credited the mass media for making them aware of the need for environmental action.

(media coverage, opinion-environmental, surveys)

12. Bowman, James S. 1978. "American Daily Newspapers and the Environment." Journal of Environmental Education 10(1): 2-11.

Surveyed editors of the 138 largest U.S. newspapers to explore their opinions on environmental problems and their papers' environmental policies and coverage. Of the 90 editors (65.2 percent) who returned mail questionnaires, almost 90 percent indicated strong personal environmental concern. Over half the papers printed at least 30 environmental stories per month. Over 80 percent said their papers have a consistent editorial policy regarding the environment and economics; a majority, however, said they would accept advertisements having negative implications for the environment. Editors tended to reject criticisms of environmental reporting; 70 percent did not believe the media focus on problems in other localities. Respondents said complexity of the subject was a major problem in environmental reporting. Concludes that these editors are committed to environmental coverage but have not addressed problems associated with environmental reporting.

(advertising, media coverage, media policy, surveys)

13. Bowman, James S. and Hanaford, Kathryn. 1977. "Mass Media and the Environment Since Earth Day." Journalism Quarterly 54(1): 160-165.

Reports results of an analysis of the volume and nature of environmental content in the leading circulation magazines in the following categories: general interest, shelter, women's, men's, sports, exploration, news, and quality. "Major articles" in every issue of the six monthlies and in twelve randomly selected issues per year of the two weeklies were studied for the period 1971-75. The results were compared with a similar study covering the period 1961-70. Environmental articles were defined as concerning air quality, water quality, population, environmental additives, energy resources management, or a combination of these topics. With the exception of the women's (McCalls) and men's (Playboy) magazines, each periodical published as many or more environmental stories from 1971-75 as in the preceding decade. With the exception of the general interest (Reader's Digest) and news (Time) magazines, each periodical published 17 or fewer articles per study period. Resource management, a topic seldom covered in the 1960s, and water quality were the most frequent subjects of articles. The small number of articles found may reflect a conflict between environmental issues and the lifestyles promoted by mass circulation magazines.

(content analysis--magazines)

14. Brewer, Michael F. 1970. "Full Disclosure in Environmental Use." Journal of Environmental Education 1(4): 109-112.

The role of environmental interpretation in public decision-making is to provide factual, understandable information and identify public preferences and values. Interpretation supports, but does not include, actual decision-making. To fulfill its role, interpretation programs should be problem-oriented and adequately staffed and funded.

(decision-making, information programs)

15. Bultena, Gordon L.; Rogers, David L.; and Conner, Karen A. 1977. "Toward Explaining Citizens' Knowledge about a Proposed Reservoir." Journal of Environmental Education 9(2): 24-36.

The relative influence of personal, socioeconomic, and situational factors on citizens' knowledge regarding a reservoir proposed by the Army Corps of Engineers was studied. Interviews were conducted with a stratified sample of 267 persons representing rural and urban residents. Based on factual questions about the reservoir, respondents received knowledge scores ranging from a low of 1 to a high of 11, with a median of 5. Persons with "high" knowledge scores were more likely than those having "low" scores to oppose (71 vs. 43 percent) and support (25 vs. 9 percent) the reservoir. Persons scoring "low" were more often undecided or indifferent (48 vs. 4 percent). The eleven independent variables used in this study explained 47 percent of the variance in knowledge, r = .69. Personal involvement (participation in community activities concerning the reservoir), and perceived personal and collective impacts accounted for 58 percent of this explained variance in knowledge, more than general attitudes or personal characteristics. Rather than building public support for proposals, information programs may sensitize citizens to possible consequences.

(attitudes--environmental, knowledge, natural resources planning, public participation, surveys)

16. Chambliss, H. Darden, Jr. and Walsh, Daniel J. 1973. "Working with the Environmental Press." Public Relations Journal (May): 22-24.

The environmental public relations professional can successfully employ traditional press relations practices. Among the basic rules: know the perspective of the publication a writer represents; know your subject well because writers' knowledge varies; and know the current news slant.

(public relations)

17. Chase, Dennis J. 1973. "Eco-Journalism and the Failure of Crisis Reporting." Journal of Environmental Education 5(1): 4-7.

Criticizes and presents detailed examples of "eco-journalism," the "journalistic practice of reporting ecological crises by ignoring, treating as unimportant, or mishandling the evidence on which the crises are based." Ecologists are accused of exploiting the media by using tactics similar to those used by anti-communists in the 1950s: presenting claims of imminent danger demanding immediate action to create and popularize population, pollution or some other crisis.

(environmental groups, media coverage)

18. Clark, Robert N.; Hendee, John C.; and Burgess, Robert L. 1972. "The Experimental Control of Littering." Journal of Environmental Education 4(2): 22-28.

Compared the effectiveness of various methods of reducing litter. Children properly disposed of 16 and 19 percent of the total litter collected at theatre matinees under baseline conditions. Experimental treatments produced the following disposal rates: 1) incentives, 94 and 95 percent; 2) litterbags, 31 percent; 3) litterbags plus instructions, 57 percent; and 4) anti-litter film, no effect. Incentives also greatly reduced litter levels over baseline conditions in campgrounds and a hiking area, although in one case littering by campers increased steadily except for a sharp drop on the day of the incentive. Concludes that small incentives are more effective than traditional anti-litter methods, including information, at inducing children to pick up litter, but the effects on actual littering in outdoor settings are less conclusive.

(field experiments, littering)

19. Clausing, Jane. 1971. "The Ecological Message of the Outdoor Magazines." Journal of Environmental Education 2(4): 10-12.

Analyzed changes in the amount of environmental information and types of recreational experiences emphasized in Field & Stream, Outdoor Life, and Sports Afield from 1966-68. Categorized 201 articles randomly selected from issues representing each month for each magazine as about: hunting, fishing, conservation, or other outdoor subjects. Coded paragraphs by types of environmental information and recreational experiences emphasized. Presents no data but reports that: 1) the amount of environmental information did not increase from 1966-68, 2) articles emphasized terrestrial, rural information and primitive, natural experiences, although the trend was toward managed experiences, 3) conservation articles equally covered consumptive and nonconsumptive recreation, and 4) Field & Stream allocated the most and Outdoor Life the least to environmental information.

(content analysis--magazines)

20. Clemens, Dennis G. 1969. "Try to Shout Quietly." Journal of Forestry 67 (April): 225-227.

As the public increasingly seeks to influence forest policy, the forester must increasingly try to identify conflicts and explain forest management in terms of its societal effects. To communicate about forest management, foresters should learn to use the media and public forums.

(dissemination, natural resources management)

21. Crossland, Janice. 1978. "Reporting Pollution." Environment 20(1): 29-31.

Describes the Pollutant Standards Index. Prepared by a federal task force, the index was designed to standardize nationwide air-pollution reporting. News media in areas where state and local agencies use the index can report when a given pollutant exceeds the "healthful" level, what part of the population will be affected, what precautions should be taken, and can also forecast pollution levels. The index is based on health effects for a 24-hour period.

(air pollution reporting)

22. Culhane, Paul J. 1974. "Federal Agency Organizational Change in Response to Environmentalism." Humboldt Journal of Social Relations 2: 31-44.

A detailed analysis of the response of resource agencies to the National Environmental Policy Act produced the following conclusions: Increased access to information and decision-making often benefits environmental publics. Agencies and interest group leaders consider public meetings less useful than informal contacts that allow input before the agency becomes committed to a course of action. Agencies view conflict avoidance rather than information-gathering as the major goal of public participation. Education is a legitimate function of public participation because information is a prerequisite for intelligent input. NEPA may permit modifications of a proposal but is unlikely to end incremental decision-making. NEPA has resulted in far-reaching organizational changes but substantive changes in agency behavior have not yet been demonstrated.

(environmental groups, legislation, natural resources planning, public participation)

23. Dana, Samuel T. 1969. "Strengthening Environmental Communications." Journal of Environmental Education 1(1): 13-14.

The relationships between man and his environment are the central concern of environmental education, conservation education, outdoor education, and resource education, although each discipline has a particular focus. The mass media afford opportunities for practitioners in each of the preceding areas to educate the public. Coverage of the environment by the media will require that the information support the source's and the medium's goals and constructively influence the general public.

(dissemination, environmental education, information programs)

24. Dangerfield, Linda A.; McCartney, Hunter P.; and Starcher, Ann T. 1975. "How Did Mass Communication, as Sentry, Perform in the Gasoline 'Crunch'?" Journalism Quarterly 52(2): 316-320.

One function of the mass media is to alert audiences to impending change. Attempted to determine to what extent selected mass media and oil organizations, and Congress, warned consumers in advance of the 1973-74 energy shortage. A content analysis of three national weekly news magazines, selected oil industry releases, and the Congressional Record, identified "mentions" (complete items) of an energy shortage. For the period 1972-73, alternately selected and examined one issue per week from the three magazines, for a total of 156 issues. Judged by mentions in the nonmedia sources, the oil industry forecasted an energy shortage in early 1971. The number of industry advertisements and releases, media mentions, and Congressional Record entries increased dramatically in late 1972. Conclude that the media reflected rather than anticipated the energy shortage.

(advertising, content analysis--magazines, energy)

25. Davis, Millard C. 1972. "Filling a Communications Gap." Journal of Environmental Education 4(1): 20-21.

Uses the Westley-MacLean communication model to illustrate the critical role of the mass media in disseminating information from resource agencies to target audiences. Agency field personnel should document which media receivers obtain information from and transmit this data to agency communication personnel and the media source.

(communication models, dissemination, information programs, program evaluation)

26. Davis, Saville. 1971. "A Profile of Robert Cahn." Journal of Environmental Education 2(4): 13.

Describes the reporting experiences and accomplishments of journalist Robert Cahn. In 1970, Cahn, who won the 1969 Pulitzer Prize for national reporting, was appointed to the Council on Environmental Quality, a three-member presidential advisory group.

(reporters)

27. Dennis, Everette E. and McCartney, James. 1979. "Science Journalists on Metropolitan Dailies." Journal of Environmental Education 10(3): 9-15.

Examined characteristics of science writers on U.S. daily metropolitan newspapers. Science journalism included general science, environment, medicine, behavioral sciences, and technology. Questionnaires mailed to 196 science writers or editors secured 75 responses from writers representing 52 organizations. The typical respondent was a 40-year-old male college graduate with about 10 years science reporting experience. A majority were full-time science writers and covered four or more topics. Respondents devoted most of their time to medicine and the environment and energy. Over 50 percent characterized writer-source relationships as cooperative; only 2.7 percent said they were adversarial. Almost 70 percent knew of no science readership research and most had only a vague image of their audience. Respondents reported trends toward less emphasis on spectacular breakthroughs, more coverage of trends and developments, and a more critical view of scientist-sources.

(media-source relations, reporters, surveys)

28. Dick, Ronald E.; McKee, David T.; and Wagar, J. Alan. 1974. "A Summary and Annotated Bibliography of Communications Principles." Journal of Environmental Education 5(4): 8-13.

Designed for environmental educators and interpreters. Contains citations and a summary of principles from communication and audience research. Principles and bibliographic entries arranged by source, message, and audience factors.

(bibliographies--mass communication)

29. Dickerson, Ben E. 1971. "Communicating Fire Prevention Messages Effectively." Journal of Forestry 69 (November): 812-813.

To explore interpersonal methods of transmitting fire prevention messages, this study attempted to analyze communication behavior patterns of opinion leaders in a rural community. Heads of 230 families and 18 community leaders were asked to identify "persons whose opinions on local issues were respected." Interviews with persons thus identified led the author to conclude that these opinion leaders acted as initiators, legitimizers, or diffusers of information in their community.

(dissemination, fire prevention, opinion leaders, surveys)

30. Donohue, G. A.; Tichenor, P. J.; and Olien, C. N. 1973. "Mass Media Functions, Knowledge and Social Control." Journalism Quarterly 50(4): 652-659.

Mass media control of scientific knowledge functions to maintain a particular subsystem or the social system as a whole. This maintenance function can occur through the media's feedback or "watchdog" role or through selective dissemination of information. Operational implications of this perspective include: 1) media reporting of conflict surrounding scientific and environmental issues is more likely in a differentiated, pluralistic system, 2) higher status population segments tend to acquire mediated information at a faster rate than lower status segments, and 3) the greater a journalist's identification with the scientific community, the less likely he is to report scientific controversy. Attributes increasing coverage of scientific conflict to the growing relevance of environmental issues to the political system. Control of scientific knowledge functional for a subsystem may be dysfunctional for the social system as a whole if it limits the general public's ability to acquire information needed to affect public policy.

(conflict, dissemination, information gain, media coverage, media-source relations)

31. Doolittle, M. L. 1972. "Planning Fire Prevention Communications." Journal of Forestry 70(10): 607-609.

Applies several principles of audience analysis to fire prevention communications. Audiences are characterized as favorable, neutral, or unfavorable toward fire prevention. The latter two types of audiences are most receptive to information communicated by locally known and credible individuals through interpersonal channels and local media. Messages should be designed to achieve a specific, behavioral effect that is realistic and can be evaluated.

(dissemination, fire prevention, information programs)

32. Eisele, Tim. 1972. "The Anatomy of the Duck Hunter." Journal of Environmental Education 4(1): 22-25.

One function of a communication program is to address misconceptions and conflicting opinions between resource managers and resource users. Analyzed three relations between the views toward waterfowl management held by Wisconsin duck hunters and waterfowl management personnel in the state's Department of Natural Resources (DNR): 1) agreement, the actual similarity between the views of hunters and the DNR, 2) accuracy, the similarity between each group's estimate of the other's views and the other group's actual views, and 3) congruency, the similarity members of each group perceive between their views and the other group's views. Mailed questionnaires secured a 78 percent response rate (n = 513) from a systematic random sample of duck hunters. Ten DNR employees also completed questionnaires. Found disagreement between the two groups' views. The DNR's estimate of hunters' views was more accurate than the hunters' estimate of the DNR's views. Both groups perceived greater congruency than existed, with hunters perceiving greater agreement than the DNR. Hunters' information sources varied by topic, with newspapers, the DNR, and magazines the top three sources for each topic. Suggests inadequate communication from the agency to hunters may explain why hunters inaccurately estimated DNR views and perceived greater agreement with the DNR than existed. Includes data on hunters' characteristics, knowledge, and attitudes.

(information programs, information sources, public-resource agency relations, surveys)

33. Erickson, David L. 1971. "Attitudes and Communications about Wildlife." Journal of Environmental Education 2(4): 17-20.

Communication programs appealing to a particular type of attitude promote the source's ideas most effectively. Based on this assumption, identified types of attitudes about wildlife. Used a Q-sort instrument containing 80 affective statements to interview 49 Columbus, Ohio, residents representing wildlife hunters and watchers, farmers and "others." Identified two distinct types of attitudes: 1) protectionist, concerned with preserving vanishing wildlife, and 2) reductionist, concerned with controlling wildlife perceived as destructive. Suggests that watchers and others are apt to be protectionists; farmers are apt to be reductionists. Describes television programs appealing to the two attitude types.

(attitudes--wildlife, television)

34. Erickson, David L. and Van Tubergen, G. Norman. 1972. "The Wolf Men." Journal of Environmental Education 4(1): 26-30.

Of the first 1,600 letters received by the Bureau of Sport Fisheries and Wildlife from viewers of a television documentary on aerial hunting of timber wolves, a random sample of 320 was analyzed. Used 26 categories to code the letters. Intercoder reliability was .80. Most of the writers, 88 percent, asked the agency to prevent hunting and killing of wolves. Although only the eastern timber wolf is endangered, 87 percent of the writers indicated they believed all wolf subspecies were becoming endangered. Writers also appeared uninformed about state jurisdiction over wildlife.

(content analysis--letters, public opinion--wildlife, television)

35. Ernst, Sandra Williams. 1972. "Baseball or Brickbats: A Content Analysis of Community Development." Journalism Quarterly 49: 86-90.

Compared the amount and type of community development coverage in a national, a metropolitan, and a small-town newspaper. Community development topics were defined as within the scope of professional city planners. Used a constructed time method to select 24 issues per newspaper. Compared number of column inches about city planning with estimated total column inches in each paper. The national paper allocated the most space and the small-town paper the least to development, 34 and 8 inches per 1,000, respectively. Categorized articles as about a present problem or program, or future problem or program and as favorable/unfavorable, neutral or balanced. The national and metropolitan papers emphasized present programs; the small-town paper emphasized present problems. Neutral topics received most coverage in the metropolitan and small-town papers and the least coverage in the national paper, which emphasized balanced coverage. Low coverage of development topics may be due to lack of news value and human interest in most community development articles.

(community development, content analysis--newspapers)

36. Ferguson-DeThorne, Mary Ann. 1978. "Energy Conservation Treatment in Exxon's The Lamp." Public Relations Review 4(1): 43-57.

Examined Exxon's magazine, The Lamp, to determine when and the extent to which Exxon informed The Lamp's audience of the impending 1973-74 energy shortage. Analyzed and classified all editorials and articles concerning conservation, consumption, and shortage from 1966-75. Also determined if The Lamp mentioned eight conservation methods advocated by Exxon officials in 1974 Senate hearings. Found the first explicit warning of a domestic shortage in summer, 1973. The Lamp first encouraged conservation in winter, 1972. Each of the conservation methods was cited at least once but only two items mentioned more than four methods. Concludes Exxon forecast an energy shortage prior to the oil boycott and before the mass media alerted the general public, but a year after the American Petroleum Institute forecast a shortage.

(content analysis--magazines, energy)

37. Fischer, Kenneth P. 1971. "How Stephen Mather Sold the Park Service Idea." Journal of Environmental Education 2(4): 21-24.

An historical account of Stephen Mather's public relations activities for the National Park Service. Despite a small staff and limited budget, Mather successfully promoted the national parks by securing extensive media coverage, encouraging promotional activities by other groups, and focusing personal attention on Washington influentials.

(historical analysis--resource agency public relations)

38. Friedman, J. J. 1977. "Community Action on Water Pollution." Human Ecology 5: 329-353.

Research was undertaken to examine the relationship of support or opposition within a community for actions that affect the physical environment. The article postulates that specific organizations' support will increase with the likelihood of specific benefits accruing from such an action to the organization. Similarly, organizations that must bear specific cost to produce collective benefits for a community will resist the action bringing the costs. Statistical analyses are undertaken to examine the impact of opposition from local polluting industries to EPA and HUD grants for water pollution control facilities.

(pollution, public participation)

39. Funkhouser, G. Ray. 1973. "The Issues of the Sixties: An Exploratory Study in the Dynamics of Public Opinion." Public Opinion Quarterly 37(1): 62-75.

Explored relations among media coverage, public opinion, and real events underlying 15 prominent issues in the 1960s. Ranked the issues according to the number of articles identified in the 1960-70 issues of three weekly news magazines. Compared the issue-ranking with results from several national public opinion polls concerning the major "problem facing America." Illustrates differences in public opinion produced by using different measures and concludes that media coverage influences public visibility of an issue more
for non-newsworthy events such as environment and pollution were a response to "artificial news."

(content analysis--magazines, public opinion--environmental, surveys)

40. Gale, Richard P. 1973. "Communicating with Environmentalists: A Look at Life on the Receiving End." Journal of Forestry 71(10): 653-655.

By virtue of their ability to influence the goals of resource agencies and industries, environmentalists have become an important public of these organizations. Suggests several ways resource organizations can improve communication with environmentalists: 1) offer specific and realistic land management alternatives, 2) detail reasons for a given proposal or practice, 3) outline the decision-making process, and 4) help environmentalists visualize the physical effects of a practice.

(environmental groups, information needs, information programs, natural resources management)

41. Grunig, James E. 1977. "Review of Research on Environmental Public Relations." Public Relations Review 3(3): 36-58.

Reviews literature on environmental public relations and concludes that: Most practitioners advocate responsible action and candid communications. In general, environmental concern is superficial, reflecting environmental coverage in the mass media. Persons most concerned and knowledgeable about the environment seek information from specialized media. To compare the predictive power of attitudinal, demographic, and situational variables on information seeking and processing and joining environmental organizations, a purposive sample of 231 urban residents was interviewed about eight environmental issues. Situational variables were problem recognition, perception of personal involvement, recognition of external constraints on behavior, and the presence or absence of a referrent criterion (a previously learned solution to the problem). A step-wise multiple regression showed that three of the four situational variables and education were generally the strongest predictors of communication behaviors. Concludes that communicators should direct information toward the actively concerned. Messages should concern the problem, solutions, and potential group actions.

(information-seeking, review--public relations)

42. Grunig, James E. and Stamm, Keith R. 1973. "Communication and Coorientation of Collectivities." American Behavioral Scientist 16(4): 567-591.

Reviews studies evaluating the effectiveness of communication between collectivities. Each of the studies used one or more measures from the Chaffee-McLeod coorientation model. Coorientation studies are particularly useful in evaluating the effectiveness of communication between formal organizations and their publics. For example, the coorientational model suggests that effective communication between a natural resource agency and community members should produce mutual understanding of the resource problem and accurate perceptions of one another's views on the resource issues. One study found community members were uncertain of the resource planning agency's views regarding disadvantageous effects of a proposed project. The agency's publicity materials and the local media had primarily stressed potential benefits of the project. This type of coorientational communication research can indicate whether and on what topics additional communication is needed.

(natural resources planning, public-resource agency relations)

43. Hanna, John W. and Mullins, Gary W. 1977. "Source Guide for Park Resource Interpreters." Journal of Environmental Education 9(1): 4-22.

This bibliography lists approximately 400 articles, books, research reports, and study texts concerning communication in park settings. Entries are divided into 14 categories.

(bibliographies--natural resource interpretation)

44. Hay, Keith G. 1979. "Environmental Communications and Energy--A Look Around." Journal of Environmental Education 11(1): 30-32.

The Conservation Director of the American Petroleum Institute concludes that environmental journalism during the past decade has obscured the fact that we must accommodate both energy development and the environment for human survival. Environmental journalists have a responsibility to be more objective, to advocate scientific resource management, and to provide analyses of acceptable risks for energy development.

(energy, media coverage, reporters)

45. Heberlein, Thomas A. 1973. "Social Psychological Assumptions of User Attitude Surveys: The Case of the Wildernism Scale." Journal of Leisure Research 5 (Summer): 18-33.

Knowledge of recreationists' attitudes usually has little utility for the resource manager. Attitudes are highly organized systems of affects and beliefs and as such, resist induced change. In addition, attitudes are only one influence on behavior. A secondary analysis of a survey of wilderness visitors' attitudes illustrated that attitudes may not predict wilderness use. Concludes that information is unlikely to change attitudes because people seek information consistent with their attitudes and information gain does not necessarily lead to the cognitive reorganization necessary for attitude change. Information campaigns are most effective when based on knowledge of the structure and content of the target audiences' attitudes.

(attitude-change, attitudes--environmental, behavior, information programs, outdoor recreation)

46. Heberlein, Thomas A. 1975. "Conservation Information: The Energy Crisis and Electricity Consumption in an Apartment Complex." Energy Systems and Policy 1(2): 105-117.

Tested the effects of information on electricity consumption at a Madison, Wisconsin, apartment complex. Measured consumption by daily meter readings during one month in early spring 1973. Ran three experimental treatments consisting of direct mail followed by a telephone call against a control group. The treatments: 1) urged increased consumption, 2) urged decreased consumption, and 3) explained how to decrease consumption. None of the treatments significantly influenced consumption. Monitored meters again in spring 1974, after the energy crisis and media appeals for conservation. Found no significant differences in consumption between the two periods. As predicted, information did not influence behavior because home energy consumption is largely a function of structural constraints and feedback on actual consumption is too delayed for meaningful evaluation.

(behavior, behavior-change, energy, field experiments)

47. Heberlein, Thomas A. 1976. "Some Observations on Alternative Mechanisms for Public Involvement: The Hearing, Public Opinion Poll, the Workshop and the Quasi-Experiment." Natural Resources Journal 16(1): 197-212.

Four criteria are used to evaluate the effectiveness of techniques for public involvement: 1) representativeness of the information obtained, 2) the participants' knowledge of the issues, 3) degree of interaction between participants and decision-makers, and 4) the extent to which input is based on actual experience. The main drawback of the public hearing is that it is seldom representative. Although surveys obtain representative input, they are difficult to prepare and responses are often based on low levels of information. Workshops provide opportunities for participants to obtain information and interact, but often lack representativeness. Field experiments should be used more frequently to provide information based on behavior. A combination of these techniques will tap the strengths and counter the flaws of each.

(public participation)

48. Henderson, Hazel. 1974. "Information and the New Movements for Citizen Participation." Annals of the American Academy of Political and Social Science (March): 34-43.

Views the power of information as its ability to alter the public's view of what is rational and appropriate. Discusses several examples of citizen groups using, gathering, and sharing information, increasing the flow of information, and obtaining access to the mass media. Suggest access to and control of information underlies the power of citizen groups.

(environmental groups, public participation)

49. Hoesterey, John and Bowman, James L. 1976. "The Environmental Message of Audubon and the Sierra Club Bulletin." Journal of Environmental Education 7(3): 61-65.

Studied trends in the types of environmental issues and improvements emphasized in Audubon and the Sierra Club Bulletin using content categories developed previously for studies of outdoor sporting magazines (see Belak, E., 1972 and Clausing, J., 1971). Analyzed editorials and news in four randomly selected issues per year from 1969-74. Both periodicals emphasized rural resources in the interior United States and general over fish and wildlife problems. Generally, both publications reported government over private actions. The Bulletin covered a wider range of and more often expressed positions on issues than Audubon. Audubon's lesser political content may reflect its tax-exempt status. Suggests a shift away from traditional conservation issues and increased political activity by the publishing organizations.

(content analysis--magazines)

50. Hungerford, Steven E. and Lemert, James B. 1973. "Covering the Environment: A New 'Afghanistanism'?" Journalism Quarterly 50(3): 475-481, 508.

Analyzed content of Oregon's 20 daily newspapers to determine if these media concentrated on geographically distant environmental problems. Compared environmental news and editorials (n=429) identified in a constructed week sample with all nonenvironmental items (n=2,235) identified in a randomly selected day of each paper's constructed week. Defined environmental content as concerning man's positive, negative, or unknown influence upon, or relationship with, his environment. As predicted, environmental items concerning Oregon focused on locations outside the papers' regions and items concerning the papers' regions focused on locations outside their circulation area more often than comparison items ($p < .001$). However, significantly more of the comparison items concerned events or situations outside Oregon ($p < .05$). By concentrating on other locations, local newspapers may help create the belief that local environmental problems are relatively unimportant.

(content analysis--newspapers)

51. Hunt, John D. and Brown, Perry J. 1971. "Who Can Read Our Writing?" Journal of Environmental Education 2(4): 27-29.

Many government publications on natural resources are ineffective because they are too difficult to read and lack human interest. Using the Flesch reading formulas, the authors examined 18 government publications from three resource agencies. They rated the majority as difficult and dull reading.

(publications, readability)

52. Ingram, Helen M. 1973. "Information Channels and Environmental Decision Making." Natural Resources Journal 13(1): 150-169.

Characterizes decision-making as a fragmented and incremental process that imposes certain constraints on the flow of information. Decision-makers are most receptive to information that supports their definition of the problem and justifies the decision-making process. Information from groups that have traditionally supported an agency and that complements the decision-makers' backgrounds receives greatest consideration and is most easily assimilated into decisions. Questions the success of the National Environmental Policy Act (NEPA) in incorporating new types of information into decisions. NEPA will have less impact on agencies' receptivity to environmental information than will the new types of specialists hired by agencies and the political strength of environmental groups.

(decision-making, legislation)

53. Jensen, Dwight. 1977. "The Loneliness of the Environmental Reporter." Columbia Journalism Review (January-February): 40-42.

After the national media carried a story about an environmental hazard in an Idaho town, only one local newspaper pursued the issue. Describes the investigative reporting of a journalist who wrote about 175 stories on lead blood-poisoning. Concludes that local and regional media have the responsibility for in-depth reporting of environmental problems, but due to their support for local economic stability and lack of writers capable of covering complex issues, most newspapers fail to provide more than superficial coverage.

(media coverage, public health, reporters)

54. Kohl, Daniel H. 1975. "The Environmental Movement: What Might It Be?" Natural Resources Journal 15(2): 327-351.

The environmental movement's successes have often imposed disproportionate burdens on the poor. One segment of the movement, however, has promoted broad social reform. By disseminating technical information to a wider audience, the "science information movement" enables lay persons to participate in decisions from which they have traditionally been excluded.

(decision-making, dissemination, environmental movement)

55. La Hart, David E. and Baily, Jon S. 1975. "Reducing Children's Littering on a Nature Trail." Journal of Environmental Education 7(1): 37-45.

A field experiment compared the effectiveness of several methods of altering littering behavior of 903 children, ages 5 to 12, distributed among 43 classes that visited a Florida nature trail. Classes received one of the following anti-litter treatments: 1) a positive statement, 2) lessons administered at school, 3) a short talk, 4) instructions, and 5) a small incentive to return specially marked litter. Baseline data consisted of the total amount of litter left on the trail in nonexperimental conditions. Only the incentive treatment reduced the amount of specially marked litter. Neither incentives nor instructions reduced littering. Suggests the influence on children of incentives to pick up litter does not extend to actual littering. The study also revealed the behavioral influence of structural variables: the amount of litter doubled when children used the trail after lunch, during which time they bought candy.

(behavior change, field experiments, littering)

56. Lambeth, Edmund B. 1978. "Perceived Influence of the Press on Energy Policy Making." Journalism Quarterly 55(1): 11-18; 72.

Explored relations between several characteristics of Washington "energy elites" and the amount of influence on energy policy-making they attributed to nine national news publications. Predicted that perceived press influence would vary with the nature of elites' policy-making roles and would be positively related to elites' positions in the policy-making hierarchy and contact with reporters. The purposive sample of 114 elites was divided among interest group leaders, energy agencies, legislators and their staff, and reporters. Measured perceived influence by an index based on summed answers to scaled questions. Contrary to prediction, mean perceived influence scores for all groups were low to moderate. None of the predicted relations received strong support. Independent variables showed a mix of positive and negative relations with perceived influence in the various groups. Concludes that elites perceive limited press influence on energy policy-making.

(energy, media-source relations, surveys)

57. Larsen, James A. 1973. "Science, Communications, Society." Journal of Environmental Education 5(1): 21-22.

During October 1971, the University of Wisconsin-Madison Science Writing Division examined approximately 22 issues of each of 53 daily newspapers. About 2 percent of the estimated news hole in the dailies was devoted to science-related subjects. Of this amount, 53 percent was about medicine and public health and 21 percent concerned the environment, defined as articles about "air, land, and water pollution." According to the author, newspaper coverage of science-related subjects is inadequate.

(content analysis--newspapers)

58. Lear, John. 1970. "The Trouble with Science Writing." Columbia Journalism Review (Summer): 30-34.

Descriptive as opposed to interpretive science reporting fails to inform readers of science's impact on their lives. Cites examples of writers' failures to critically evaluate science-related information. Editors should require reporters to state the social consequences of scientific and environmental developments.

(reporters)

59. Lerbinger, Otto. 1973. "A Long View of the Environment." Public Relations Journal (May): 20-21.

Public concern about environmental problems requires business public relations to perform three new functions: 1) monitor and influence government pollution-abatement activities, 2) gain public support for the organization's pollution control programs, and 3) educate the public on cost-benefit analysis and the need to consider trade-offs in environmental decision-making. Scientists and academicians constitute a major target audience.

(pollution, public relations)

60. Levin, Felice Goodman. 1972. "Historic Conflicts in Conservation Communications." Journal of Environmental Education 3(3): 36-38.

An historical account of public relations programs initiated by Gifford Pinchot of the U.S. Forest Service which led to the first Congressional limits on public relations activities by government agencies. Pinchot's use of press releases, specialized publications, internal communication devices, and pseudo-events became the prototypes for other executive agencies. Discusses the conflict over conservation of Western forest lands that precipitated the 1908 law and subsequent Congressional efforts to further restrict relations activities by executive agencies.

(historical analysis--resource agency public relations, legislation)

61. Lingwood, David A. 1971. "Environmental Education Through Information-Seeking, the Case of an 'Environmental Teach-In'." Environment and Behavior 3(3): 230-262.

Information-seeking characteristics of attendants at University of Michigan teach-in sessions and changes in university students' levels of environmental knowledge, concern, and information-seeking following the 1970 event were studied. Of the randomly selected teach-in attendants, 334 or 46 percent returned questionnaires. Simple random sample surveys of university students, the first conducted three months before and the second, two months after the teach-in, produced 71 and 73.5 percent response rates, respectively. The teach-in drew primarily active and concerned students and professionals. Attendants rated, in order, the teach-in, print media, and conversations as their most important environmental information sources. Comparison of the two student surveys showed increased concern, conversation, and knowledge (measured by four questions) about the environment, but neither personal characteristics nor media use strongly predicted these changes.

(environmental events, information-seeking, information sources, knowledge, surveys)

62. Lipman, Diane S. and Hodgson, Ronald W. 1978. "The Influence of Interpersonal Interpretation on the Effectiveness of Self-Guided Cave Tours." Journal of Environmental Education 10(1): 32-34.

Natural resources interpretation attempts to motivate visitors to learn more about the resource. Conducted a field experiment to judge the influence of interpretive talks on information-seeking by visitors on self-guided tours at Carlsbad Caverns National Park. Measured information-seeking by the number of cave-related questions asked at the information desk. Compared information-seeking during the 14 days that personnel gave interpretive talks with information-seeking during the 14 days before and after the experiment. Computed a two-way analysis of variance for the effects of attendance and talks. Only talks were significantly (p .004) related to information-seeking. Attendance did not interact with the talks significantly. Uncontrolled variables included the subjects of the talks and total amount of information presented.

(field experiments, information-seeking, natural resource interpretation)

63. Lord, William B. and Warner, Maurice L. 1973. "Aggregates and Externalities: Information Needs for Public Natural Resources Decision-Making." Natural Resources Journal 13(1): 106-117.

Comments pertinent to the communicator in a resource agency are presented in a discussion of information needs in natural resources planning. To participate effectively in a pluralistic bargaining process, concerned groups should be informed of specific issues which affect their interests in the resource and the consequences of alternative decisions for their interests. Regional and national interests in the resources are more difficult to identify with local groups. The National Environmental Policy Act implies that such interests should be considered, however. A minimum agency response to aggregate interests is to provide information which will encourage local consideration of broader resource issues.

(decision-making, information needs, information programs, public participation)

64. Ludham, Charles E. 1974. "Abatement of Corporate Image Environmental Advertising." Ecology Law Quarterly 4(2): 247-278.

Analyzes the nature and potential for regulation of corporate environmental image advertising. The controversy over image advertising centers on a corporation's ability to create a public impression of environmental concern as a substitute for positive action. Image advertising attempts to increase profits indirectly, by emphasizing the company's sense of social responsibility. Other goals of image advertising include encouraging investment, impressing prospective employees, securing financial services, and influencing shareholders' attitudes. Distinguishes between "freedom of speech," protected by the First Amendment, and "commercial speech," subject to regulation. The Federal Trade Commission's (FTC) mandate is to correct imbalances in the economic relationship between business and consumers created by unfair and deceptive advertising. Image advertising raises the question as to whether the FTC should extend its role to image advertising, which affects economic relationships indirectly.

(advertising)

65. Marler, Lela. 1971. "A Study of Anti-Litter Messages." Journal of Environmental Education 3(1): 52-53.

The cognitive and behavioral effects of three types of anti-litter leaflets were compared in an experiment conducted in three national forest campgrounds in Utah. Reward-oriented, punishment-oriented, and neutral (factual) anti-litter leaflets were distributed to campground users for one month. A total of 118 camping groups, of which 30 received no leaflets, completed questionnaires. Sites were inspected for litter before and after use. Demographic differences between the groups may have confounded the following results: 1) the control group knew more about littering than any experimental group, 2) groups receiving punishment and reward-oriented leaflets placed more responsibility for litter control on the Forest Service than groups receiving factual leaflets, and 3) littering behavior varied by groups, with a higher percentage of the control group leaving their sites as clean as groups receiving reward or neutral-oriented leaflets. In this study, the effects did not warrant the costs of distributing leaflets.

(field experiments, littering, media/methods)

66. Marx, Leo. 1970. "American Institutions and Ecological Ideals." Science 170(27 November): 945-952.

Draws several parallels between themes in American pastoral literature and issues raised by current "radical ecologists." If one accepts the pastoral-ecological perspective, reform must attempt to change institutions that determine society's impact on the environment. Calls on organized science as the group most highly trained to evaluate environmental issues, to inform and educate citizens rather than assume that media coverage, political speeches, and public interest reflect genuine change.

(environmental literature, environmental movement, scientists)

67. McNelly, John T. 1973. "Mass Media and Information Redistribution." Journal of Environmental Education 5(1): 31-36.

Based on a review of family planning communication research and theories of cognitive consistency and change, suggests communicators in social change programs: 1) provide audiences with new information, rather than try to directly manipulate public attitudes, and 2) redistribute information to persons of lower socioeconomic status directly, using the mass media, particularly the broadcast media. Cognitive consistency theory suggests that because attitudes consist of highly structured, interrelated beliefs, a change in one or more beliefs may lead to attitude restructuring and change. Beliefs are defined as judgments or inferences about information. The author contends that information gain is more likely to alter beliefs than persuasive messages are to change attitudes. Many family planning communication programs are based on the two-step flow theory. Diffusion of this information, however, is often confined to urban elites. Communication programs should include research on audiences' information needs and evaluation of message effectiveness.

(attitude-change, diffusion, family planning, information gain, information programs)

68. Metress, James and Metress, Eileen. 1976. "The Environmental Press." Journal of Environmental Education 7(3): 38-50.

Lists and describes popular and professional periodicals dealing with environmental problems.

(bibliographies--environmental periodicals)

69. Miloy, Leatha F. 1974. "Coastal and Marine Information Programs." Coastal Zone Management 1(2): 165-174.

Discusses the effectiveness of information programs in coastal zone resources management. Defines information as the communication of knowledge through useful and meaningful collections of data or facts. Defines information programs as organized efforts to assimilate information, prepare it in a suitable format, deliver the finished product to a specified audience, and receive feedback from that audience for evaluative purposes. Discusses key elements of input, the information unit, output or product, distribution, and feedback. Effective information programs require 1) inputs from an accessible resource base, 2) professionally trained communicators, 3) a variety of finished products that can compete for audience attention, 4) a network that can accurately identify audiences, and 5) a method for audience feedback.

(information programs, natural resources management)

70. Molotch, Harvey and Lester, Marilyn. 1975. "Accidental News: The Great Oil Spill as Local Occurrence and National Event." American Journal of Sociology 81(2): 235-260.

"News" is traditionally defined as the reporting of important events. In this study, news was viewed as the process through which opposing interests compete for media access in order to determine what the public perceives as important. Analyzed all articles about the 1969 Santa Barbara oil spill published in the local News Press over the subsequent two years and randomly selected 195 of the articles. Analyzed contents of 19 nonlocal newspapers for coverage of the locally-reported events. Classified all articles by who was involved and the event. Found that with increasing time, government and the oil industry dominated nonlocal news, although the News Press gave nearly equal coverage to conservation groups and the oil industry. Concludes that the federal government and oil industry determined what information the American public received about the spill, by gaining differential access to national media.

(media coverage, media-source relations, pollution)

71. Moore, Richard L. 1970. "Environment--A New PR Crisis." Public Relations Journal (March): 6-9.

Describes several incidents in which industry either failed to anticipate its environmental problems or to communicate its corrective actions to the public, each time with negative consequences for the firm. To maintain public support, industry must initiate pollution control programs and the public relations staff must inform interested groups and individuals of the firm's efforts.

(pollution, public relations)

72. Morfoot, Colleen and Blake, Brian F. 1978. "Pitfalls and Opportunities." Journal of Environmental Education 10(1): 23-31.

Reviews and suggests improvements in the criteria and methods used to evaluate the effectiveness of natural resources interpretation programs. Effectiveness criteria should include understanding (the ability to grasp logical implications of the topic) in addition to audience interest and short-term retention. The use of multiple measures of an effectiveness criterion would reduce potential bias due to reactivity and instrument decay. To generalize study results, extraneous factors such as audience composition, weather, and time should be controlled and reported.

(review--natural resource interpretation)

73. Murch, Arvin W. 1971. "Public Concern for Environmental Issues." Public Opinion Quarterly 35: 100-106.

A random sample survey of 300 Durham, North Carolina, residents revealed that respondents tended to view pollution in geographically distant areas as more serious than pollution in their surroundings, despite objective evidence to the contrary. Although less than a majority, many respondents expressed willingness to accept some personal responsibility for environmental problems and to work to resolve them. Suggests the media's focus on national rather than local environmental problems plus a psychological reluctance to acknowledge serious problems in one's own surroundings may account for these findings. Environmental communications should focus on local conditions and suggest specific measures to ameliorate local problems.

(media coverage, public opinion--pollution, surveys)

74. Novic, Kenneth and Sandman, Peter M. 1974. "How Use of Mass Media Affects Views on Solutions to Environmental Problems." Journalism Quarterly 51(3): 448-452.

Explored relations between media use and personal commitment toward solving environmental problems. Surveyed a nonprobability sample of 158 university students. For each of eight issues, repondents selected three information sources (from a list of 15) from which they had learned most. Based on the responses, divided the sample into two roughly equal groups, "heavier" and "lighter" mass media users. For each issue, respondents selected a personal or societal (or combination) solution and rated on a five-point scale how well-informed they were and how serious they considered it. As predicted, heavier media users considered themselves less informed, viewed the issues as less serious, and chose less personal solutions than lighter media users. All respondents who considered themselves well-informed viewed the issues as more serious than those who judged themselves less informed. Only among lighter media users did those who judged themselves well-informed choose more personal solutions. Note several methodological problems with the study and suggest further investigation of the relationship between media use and personal commitment to environmental improvement.

(media use, opinions--environmental, surveys)

75. Nunn, Clyde A. 1979. "Readership and Coverage of Science and Technology in Newspapers." Journalism Quarterly 56(2): 27-30.

Conducted a secondary analysis of two national area probability sample surveys to determine if newspapers present as much science-related news as the public wants. Both surveys used through-the-newspaper interviews. The 1971 survey obtained readership scores from 1,714 persons reporting reading a paper "yesterday." The 1977 survey asked 3,048 readers and nonreaders to rate how interesting an item was after reading it. The rank order correlation between 1971 readership scores and "very interesting" scores given to the same kinds of items by frequent readers in 1977 was .59. From 1971-77, editorial content about science-inventions decreased and environmental content increased slightly. Energy and the environment were not among the 17 categories most often read in 1971, but in 1977 respondents ranked energy, public health, and environment first, third, and sixth respectively. Concludes that newspaper editors underestimate public interest in science and science-related news.

(content analysis--newspapers, readership, surveys)

76. O'Riordan, Jon. 1976. "The Public Involvement Program in the Okanagan Basin Study." Natural Resources Journal 16(1): 177-196.

Describes the public involvement and education program used in a four-year study of water resources in British Columbia's Okanagan Basin. The composition and duties of the task forces were designed to obtain consensus among regional interests. In addition to disseminating information to nonparticipants, the education program incorporated several procedures to obtain broad public input that was subsequently compared to recommendations of the task forces. Discusses rationale underlying selection of particular involvement and educational techniques at different planning stages. Suggests the program succeeded by combining a range of interaction and education techniques.

(information programs, natural resources planning, public participation)

77. Pastorius, James S. 1971. "New Ecology Rules Call for PR Moves." Public Relations Journal (June): 10-11.

Outlines public relations activities needed to comply with the 1899 Refuse Act. These range from checking opponents' positions via public documents to preparing environmental impact statements. In addition to helping the firm meet regulation deadlines, the practitioner must understand the regulatory process to communicate successfully the firm's position to internal and external publics.

(public relations, regulations)

78. Peters, William H. 1973. "Two Measures of Print Advertising's Social Responsibility Level." Journalism Quarterly 50: 702-707.

Investigated changes in the volume and type of socially responsible advertising, defined as advertisements that give or offer to give "helpful information" (information that makes the reader a wiser consumer) or that feature a social problem in the headline or illustration. Randomly selected a total of 80 issues published in Life and Time and 20 in McCall's and Reader's Digest in 1965, 1970, and 1972. Counted a total of 5,764 advertising pages but coded only ads by industry and related associations that were at least one-half page long. Intercoder reliability ranged from 75 percent on the number of socially responsible ads in 1965 and 1970 issues to 93 percent on the number of helpful information ads in 29 issues. About 10 percent of the total advertising pages in each year contained helpful information. The proportion of social problem ads peaked at about 5 percent in 1970 and declined to slightly more than 3 percent in 1972. Ads featuring ecology themes increased from .03 percent in 1965 to 1.79 percent in 1970 ($p < .001$) and declined to .98 percent in 1972. Considered most ecology ads self-serving because they tied the sales pitch to the ecology theme, boosted the advertiser's image, or expounded its point of view.

(advertising, content analysis--magazines)

79. Plumb, James W. 1973. "Public Attitudes and Knowledge of Forestry." Journal of Forestry 71(4): 217-219.

A national survey of about 1,500 people revealed low public confidence in industry management of forests and related resources, and generally, lack of knowledge about resource agencies and the size, location, and ownership of U.S. forests. A second survey of 388 suburbanites representing four regions of the country showed that even well-educated persons were unfamiliar with commonly used forest management terms. Based on the survey results, a public relations program using a variety of information techniques was conducted to improve public knowledge of forestry.

(knowledge, public opinion--forest management, public relations, surveys)

80. Priscoli, Jerry Delli. 1975. "Citizen Advisory Groups and Conflict Resolution in Regional Water Resources Planning." Water Resources Bulletin 11(6): 1233-1243.

To reach consensus on a resource plan, citizen advisory groups (CAG) and planners must: 1) agree on salient issues and 2) recognize intergroup conflict over appropriate solutions. Using a mail survey, studied the extent to which these two prerequisites for consensus were achieved by 175 planners (69 percent response) and 70 CAG members (53 percent response) in four water resources planning studies. The CAG and planners in each region generally agreed on the five most important issues. Evaluated shared and nonshared perceptions of conflict regarding solutions to these issues using an index computed from respondents' evaluations of intergroup agreement. CAGs perceived agreement and planners conflict on nine issues; planners perceived agreement and CAGs conflict on three issues; both groups perceived agreement on four issues and conflict on four issues. Results question assumption that communication between CAGs and planners produces the shared understanding necessary for eventual conflict resolution.

(conflict, natural resources planning, public participation, public-resource agency relations, surveys)

81. Pryor, Larry. 1972. "The Ecology Thicket." Journal of Environmental Education 4(2): 55-56.

An environmental reporter with the Los Angeles Times evaluates the performance of environmental writers and editors. Reporters often substitute information from narrowly focused and biased sources for the comprehensive reporting needed on complex environmental issues. Interpretive reporting, however, reduces the writer's neutrality and sometimes, the clarity of the article. Reporters should be cognizant of their own biases and try to write understandable and interesting as well as accurate copy. Editors should provide alternatives to news, columns, and editorial formats for the display of investigative stories.

(reporters)

82. Rosario, Florangel Z. 1971. "The Leader in Family Planning and the Two-Step Flow Model." Journalism Quarterly 48(2): 288-297, 303.

Reviews theories and studies of opinion leadership in modern and traditional societies, focusing on family planning communications. Suggests that two-step flow does operate in the diffusion of family planning information. The family planning opinion leader, unlike opinion leaders on other topics, is not necessarily characterized by prestige, status, or mass media exposure, but is described as: exposed to relevant information sources, well-informed, socially accessible, polymorphic, and sharing the attributes of those she influences.

(review--family planning communications)

83. Ross, John E. 1969. "Azimuths in Conservation Communications Research." Journal of Environmental Education 1(3): 88-92.

Outlines potential areas for communications research in environmental planning. Possible studies of communication in decision-making include: 1) diffusion of information among groups, 2) effects of controversy on the form and volume of communication and the time required to reach a decision, and 3) how alternatives are communicated. Research on individuals' characteristics could include: 1) relationships between the receiver's knowledge, and general and issue-specific attitudes, 2) receivers' understanding of and attitudes toward ecological concepts, and 3) how people faced with complex alternatives reach decisions. Research on communication systems could include content analyses of formal and personal communication channels and the situational variables that affect information flow and output.

(communication research, natural resource planning)

84. Rubin, David M. and Landers, Stephen. 1969. "National Exposure and Local Cover-Up: A Case Study." Columbia Journalism Review (Summer): 17-22.

Based on data from a federal health agency, McCall's ran a 1968 story naming 102 cities as needing corrective action to maintain the safety of public water supplies. Responses of editors in these cities to a mail questionnaire (response rate not specified) illustrates how local press responded to outside criticism. Over 80 percent of the local papers carried at least one story; most stories used local (80 percent) or state sources; and 20 percent used local sources not affiliated with the water supply. Presents several quotes indicating that most stories mainly presented official denials. Faults McCall's for sensationalism and local papers for lack of investigative reporting.

(media coverage, public health, surveys)

85. Ryan, Michael and Owen, Dorothea. 1976. "A Content Analysis of Metropolitan Newspaper Coverage of Social Issues." Journalism Quarterly 53: 634-640, 671.

Compared the amount of event- and issue-oriented news published during March 1975 by eight randomly selected U.S. newspapers having circulations exceeding 300,000. Defined issue-oriented stories as concerning, "...a timeless social problem or issue... not a specific event." Identified 6,638 items in a constructed week sample and coded articles as event- or issue-oriented and as about: health, housing, education, crime-law, poverty-welfare, ecology, racism-sexism, mass transportation, and drug abuse. Intercoder reliability on orientations and categories were 73 and 90.3 percent, respectively. Social issues comprised a mean of 8.8 percent of the papers' combined newsholes. Crime accounted for the largest and drug abuse the smallest percentage of social issues news (35.4 and .6 percent, respectively). Ecology accounted for 4 percent. With the exception of crime and transportation, each paper published significantly more issue-oriented stories on all topics. Results question the idea that newspapers neglect interpretive analyses of social issues but show low coverage of social issues in general and particularly of ecology, poverty, and drug abuse.

(content analysis--newspapers)

86. Ryan, Michael and Owen, Dorothea. 1977. "An Accuracy Survey of Metropolitan Newspaper Coverage of Social Issues." Journalism Quarterly 54: 27-32.

Studied the accuracy of newspaper coverage of social issues. Analyzed issues selected from metropolitan newspapers for issue-oriented articles about nine social issues (see Ryan, M. and Owen, D., 1976). Articles and questionnaires mailed to major sources secured an 80.6 percent response rate. Sources identified errors and indicated which of 36 possible errors occur most frequently in articles about social problems. The mean number of errors reported per story was 3.88. Sources reported the largest mean number of errors per story (5.4) in education articles and the smallest (1.6) in transportation articles. The mean errors reported per ecology story was 3.3. The most frequently reported errors were: relevant information omitted, complex material inadequately explained, important aspects underemphasized, misleading headline, and positive aspects underemphasized. Comparison with previous studies showed sources report more errors in social issues stories than in general news, while roughly the same number in social issues and science news. Conclude that social issues reporting, like science coverage, is complex and requires special training.

(accuracy, content analysis--newspapers, survey)

87. Sachsman, David B. 1976. "Public Relations Influence on Coverage of the Environment in San Francisco Area." Journalism Quarterly 53(1): 54-60.

A three-part study identified sources of environmental news in San Francisco Bay Area media. A purposive sample of 11 newspaper journalists monitored press releases received over an eight-week period. Government sources followed by interest groups supplied the largest number of releases. A content analysis identified 1,002 environmental items covered by 25 print and broadcast media over a 12-day period. Backtracking interviews with 41 journalists at these media identified sources of 200 of the 474 nonwire or network-supplied items. The public relations sources responsible for 105, 53 percent, of the 200 items were: government (38), interest groups (34), industry (27), and other institutions (6). Forty-six of the 105 stories were rewritten press releases; 28 involved further research; and 26 resulted from telephone and personal contacts. Conclude that reliance on official sources partially explains why journalists are influenced by public relations efforts. Suggests environmental reporters do not necessarily interpret the news.

(media-source relations, public relations)

88. Sandfort, Steve and Cone, John F. 1977. "Using Television Effectively." Journal of Forestry 75(February): 80-83.

A forester and a television public service director describe how to prepare materials, arrange coverage, and work with television personnel in developing news stories, public service spots, and feature programs.

(media/methods, television)

89. Sandman, Peter M. 1972. "Who Should Police Environmental Advertising?" Columbia Journalism Review (January/February): 41-47.

Based on an analysis of advertising content, concluded that ecology themes are frequently used to sell a product or service or to bolster the advertiser's image. Contends that because the environment is an issue of public importance, advertisements that make irrelevant and misleading environmental claims should be censored. Standards set by advertising associations and regulatory commissions are currently limited to overtly fraudulent, offensive, or misleading content. Views the media as the appropriate institutions to censor environmental advertisements and suggests the media revise advertising acceptability criteria to include environmental content.

(advertising, media policy)

90. Sandman, Peter M. 1973. "Madison Avenue vs. the Environmentalists." Journal of Environmental Education 5(1): 45-50.

Compared effects on public opinion of an advertising campaign for a gasoline additive and subsequent unfavorable publicity. Although the campaign initially boosted sales, local media did report tests questioning the claims, suits filed against the company, and government accusations of false and misleading advertising. Telephone interviews conducted with 275 persons in Palo Alto and San Jose, California, showed that 14.2 percent of the respondents could not recall an ad theme and 60.7 percent could not recall a critical news theme. Respondents who did recall a news theme, however, were more likely to say the additive had less anti-pollution value than respondents who recalled no news theme ($p < .001$). Concludes that critical publicity did not convince the public that the additive had little anti-pollution value, and the campaign did not lessen public concern about air pollution.

(advertising, information gain, public opinion--air pollution)

91. Schneider, Gerald. 1974. "Why Conservation Organizations Fail to Educate." American Forests (April): 4, 73-75.

Cites five reasons why environmental organizations fail to promote social reform through education. Emphasis on content rather than the learning process fails to encourage critical evaluation by receivers. Focus on facts disseminated through mediated channels fails to encourage people to examine their own behavior. Environmental groups tend to promote their viewpoints rather than encourage audiences to examine the merits of an issue. Environmentalists do not distinguish special from public interests, thereby failing to mobilize the general public. Environmentalists fail to show a concern for people, as evidenced by an emphasis on one-way, mediated communication rather than face-to-face discussions.

(education programs, environmental groups, interpersonal communication)

92. Schoenfeld, Clay. 1969. "What's New About Environmental Communication?" Journal of Environmental Education 1(1): 1-4.

Students in the University of Wisconsin-Madison's Conservation Communication Program were asked to compare environmental education with traditional conservation education. According to the students, environmental education concerns: 1) social as well as physical and biological aspects, 2) global issues, 3) urban problems, and 4) public involvement. Environmental education requires greater use of audio-visual media to reach larger segments of the public. More research is being conducted on public attitudes toward conservation, public understanding of ecological concepts, and techniques to present information more effectively.

(environmental mass communication)

93. Schoenfeld, Clay. 1971. "Telling It Like It Is." Journal of Environmental Education 2(4): 14-16.

Inadequate public relations is viewed as partially responsible for delays in implementing resource management policies. The need to communicate clearly alternative management options and their corresponding social, biological, and economic consequences, and to encourage public support for wise resource use is greatest at the local level. Local and regional resource agencies need personnel who are familiar with the process of social change and who have organizational and communication skills.

(information programs, natural resources planning)

94. Schoenfeld, Clay. 1972. "Irruption in Environmental Communications." American Forests (October): 20-22, 52-55.

Describes the careers and contributions of historical leaders in conservation communications. Views contemporary environmental communication as both promoting and being affected by the environmental movement. Defines environmental communication and describes its role in resource management agencies, eco-action organizations, resource industries, and educational institutions. Notes the environmental information explosion that occurred in the late 1960s and describes environmental coverage by the mass and specialized media. Surveys the response of schools of journalism to the new environmental "beat."

(environmental mass communication)

95. Schoenfeld, Clay. 1975. "Environmental Mass Communications: Problems and Promises." Journal of Environmental Education 6(3): 20-26.

Eleven components of mass communication, drawn from the Hiebert-Ungureit-Bohn model, are discussed with respect to the constraints each places on the flow of environmental information. The components and their associated problems include: 1) communicators--few are trained in both science and communications; 2) contents--disagreement exists as to the media's proper role as objective observer or advocate; 3) codes--many environmental problems defy media definitions of news; 4) gatekeepers--disagree on what constitutes the environmental beat; 5) media--many refrain from covering social issues raised by environmental problems; 6) regulators--economic interests suppress investigative reporting and lack of national leadership reduces the environment's news value; 7) filters--personal interests may reduce message effects; 8) audiences--many people are not reached by one-medium, one-audience messages; 9) feedback--delayed, diffused feedback is difficult to evaluate; 10) noise--technical terms reduce message effectiveness; 11) amplification--decreased media coverage reduces public perception of the importance of environmental problems. Concludes with a discussion of potential improvements.

(communication models, environmental mass communication)

96. Schoenfeld, Clay. 1975. "The Ecology of Resource Report Writing." Western Wildlands 2(3): 37-40.

Researchers-turned-writers can improve their communication skills by organizing ideas and manuscript. First, distill ideas into a brief statement and identify a specific audience and the article's purpose. Then select and study a journal and tailor the article for it. One formula for organizing the manuscript: 1) attract the reader's attention, 2) identify the reader with the message, 3) offer enough information for the reader to evaluate, visualize, and use the message, and 4) summarize the message's impact on the reader.

(media/methods)

97. Schoenfeld, Clay. 1977. "The Changing Role of Mass Communication in Environmental Education." Journal of Environmental Education 8(3): 60-64.

The following trends in environmental communication are discussed: Specialized and mass media have helped establish environmental problems as public issues. Requirements of the National Environmental Policy Act provide news pegs for environmental stories. Business and industry are increasingly using advertising to communicate their views. Organized labor's continued support for environmental improvement is crucial, but uncertain.

(advertising, environmental mass communication, legislation, public opinion--environmental)

98. Schoenfeld, A. Clay. 1979. "Assessing the Environmental Reportage of the Daily Press." Accepted for publication by Journal of Environmental Education in 1980.

Reviews conclusions of researchers and practitioners regarding the quality and impact on public opinion of the mass media's environmental coverage. The daily press appears to have contributed little to environmental reforms prior to 1969-70. Some commentators credit subsequent media coverage with increasing the general public's access to scientific information and helping create public pressure for further reform. Researchers, however, usually conclude that the quantity and quality of environmental reporting is inadequate and at times, obstructionist, although opinion polls indicate the public uses the media for environmental information and continues to support environmental protection. Self-criticisms indicate that professional journalists are aware of practical and normative constraints on covering complex, controversial environmental issues.

(reviews--media coverage and public opinion)

99. Schoenfeld, Clay. 1979. "Environmental Communications Today." Journal of Environmental Education 10(3): 43-48.

Traces the antecedents of and describes current environmental communications. Nature writing, outdoor writing, science writing, public affairs reporting, and persuasion, each practiced at the turn of the century, contributed to the surge of environmental communications in the 1960s. Regardless of its source, environmental communications today is characterized by its content, recognition of problems, emphasis on values and action, and integrated approach to people, resources, and technology.

(historical analysis--environmental mass communication)

100. Schoenfeld, A. Clay. 1979. "The Press and NEPA: The Case of the Missing Agenda." Journalism Quarterly 56: 577-585.

The concept of agenda-setting suggests that media coverage lends a problem salience, thereby helping create public pressure for remedial political action. A content analysis showed that with few exceptions the press did not urge, anticipate, or extensively cover Congressional passage of the 1969 National Environmental Police Act (NEPA). The 1968-69 issues of the New York Times Index, all 1969 issues of seven environmental magazines, and the 1969 issues of two mass magazine indexes were analyzed for mentions of NEPA. The Times mentioned NEPA only routinely; only one of the specialized periodicals analyzed Congressional actions before NEPA's passage; and only one major news magazine anticipated NEPA's effects. Suggests the press did not perform an agenda-setting function for this issue because the mass media had not yet established an environmental beat and existing environmental lobbies and their periodicals focused on specialized, not holistic issues.

(agenda-setting, content analysis--magazines, content analysis--newspapers, legislation)

101. Schoenfeld, A. Clay; Meier, Robert F.; and Griffin, Robert J. 1979. "Constructing a Social Problem: The Press and the Environment." Social Problems 27(1): 38-61.

Did the daily press help define the environment as a social problem by reporting the issues raised by early environmental claims-makers? To answer this question, the authors studied the chronology of environmental terminology in several media and reviewed studies of newspaper coverage of environmental issues. They conclude that the daily press generally ignored issues raised by proponents of environmental change and other media during the 1960s. Several characteristics of the mass media as a social institution and the environment as an issue are suggested to explain why the press did not extensively cover environmental issues until legislation and staged and real events lent the topic salience in the late 1960s. The analysis supports the theory that information flows from claims-makers and independent publications to government and lastly, from the mass media to the public. Includes an extensive literature review.

(diffusion, environmental movement, media coverage)

102. Schoenfeld, Sheryl Smith. 1971. "Evaluating Some Aspects of VIS Activities in the National Forest." Journal of Forestry 69(5): 281-284.

A four-part study analyzed information activities of the Visitor Information Service of the U.S. Forest Service and forest visitors' information needs. The study included: 1) a mail survey of national forest supervisors (n=113, an 84 percent response rate), 2) an analysis of mail received at one regional, two forest, and 37 district offices over a three-month period, 3) interviews with 106 randomly selected campers at 12 campgrounds, and 4) interviews with six field technicians. Forest supervisors reported increasing use of publications and other self-teaching media. The typical person writing to the Forest Service was a married male living in a small town or suburb. However, most campers interviewed lived in metropolitan areas. A majority of campers were uninformed about forest management and the forester's professional duties. Campers' main information sources were past experience and maps. Campers wanted more information they could use to enjoy the immediate area but half did not want pollution-related information. Suggestions for improvement include public relations training for seasonal employees and greater use of interpretive media emphasizing forest management.

(content analysis--letters, information needs, information sources, media/methods, outdoor recreation, surveys)

103. Sellers, Leonard and Jones, David W., Jr. 1973. "Environment and the Mass Media." Journal of Environmental Education 5(1): 51-57.

A study of environmental activists' information sources reveals that the daily news media are insignificant sources of environmental information for persons most concerned about environmental problems. Telephone interviews with 301 randomly selected Sierra Club members indicated that conservation groups and specialized periodicals were their primary sources of environmental information. Criticisms of mass media environmental coverage include: 1) the definition of news as an event inhibits coverage of incremental environmental processes; 2) media support of community growth and economic dependence on advertising discourage investigative reporting; and 3) reporters' reliance on traditional sources and distrust of environmental groups results in after-the-fact reporting.

(environmental groups, information sources, media coverage, media-source relations, surveys)

104. Sewell, W. R. Derrick and Phillips, Susan D. 1979. "Models for the Evaluation of Public Participation Programmes." Natural Resources Journal 19(2): 337-358.

Compares four models developed for the evaluation of public participation programs in Canada. In general, each model divides the objectives of public participation into information/education and agency/public interaction functions. The models differ in procedures and evaluation criteria. Notes several needs for improvement of the models.

(information programs, program evaluation, public participation)

105. Shabman, Leonard A. 1974. "Toward Effective Public Participation in Coastal Zone Management." Coastal Zone Management 1(2): 197-207.

Discusses characteristics of the source and content of information that influence its generation and use in public decision-making. Source-related factors are: 1) acknowledged authority to represent a given interest, 2) support of or veto power over the agency, 3) ability to present a coherent, unified position, 4) technical expertise and understanding of the planning process, 5) adequate staffing and funds, and 6) the perception that benefits will exceed costs of generating information. Content-related factors are: 1) regulations requiring certain information (will legitimize but not necessarily incorporate new information into planning), 2) decision-makers' views of their agency's function and the major issues, and 3) decision-makers' biases resulting from their training. For each factor, suggests practices to encourage wider participation.

(natural resources planning, public participation)

106. Sharma, Navin C.; Kivlin, Joseph E.; and Fliegel, Frederick C. 1975. "Environmental Pollution: Is There Enough Concern to Lead to Action?" Environment and Behavior 7(4): 455-471.

Analyzed survey data from a random sample of 225 adults in a small Illinois town, where the largest employer was responsible for a chronic water pollution problem. Posited a causal model in which: 1) socioeconomic variables influence information received (through the media, informal conversations, and community participation); 2) information influences attitudes toward pollution; and 3) attitudes toward pollution influence opinions on the issue: whether or not to close down the polluting industry. Path coefficients showed that only discussion with family and friends, attitudes toward water pollution, and occupational prestige were significantly related to opinions on closing the industry. Results suggest that regardless of socioeconomic status or age, people who informally discuss pollution were more likely to favor closing the industry and that media use did not create an anti-pollution attitude in this sample.

(interpersonal communication, public opinion--pollution)

107. Stamm, Keith R. 1970. "Two Orientations to the Conservation Concept of Scarcity." Journal of Environmental Education 1(4): 134-139.

Conflicts in resource policy-making often center around how best to manage a scarce resource. Conceptualized two opposing views on solutions to scarcity problems, "reversal of trends" (preservation of a scarce resource) and "functional equivalents" (substitution of another resource). Surveyed a stratified, random sample of 607 outdoor participants and nonparticipants to determine if people consistently apply these views to scarcity issues and if outdoor participation and media use influence a person's orientation. Indexed each orientation based on solutions chosen for seven resource problems. In general, outdoor participants were more likely to read conservation media, belong to conservation groups, and support preservation and substitution solutions than nonparticipants. Similar results were found by comparing readers of conservation media and members of conservation groups with nonreaders and nonmembers. Suggests outdoor activities and media use promote awareness of resource problems but do not determine a person's views. Notes a need for more conservation information in nonconservation media.

(attitudes--conservation, media use, outdoor recreation, surveys)

108. Stamm, Keith R. 1972. "Environment and Communication." Pp. 265-294 in F. Gerald Kline and Phillip J. Tichenor (eds.), Current Perspectives in Mass Communication Research, Vol. 1. Sage Annual Reviews of Communication Research, Beverly Hills, Ca.: Sage.

Reviews communication effects research, noting the failure to demonstrate causal relations among knowledge, attitudes, and behavior. Suggests these concepts, traditionally used to test communications' effects, fail to capture the relationships fundamental to the "ecological picture." Studies evaluating the influence of perceived public attitudes on environmental decisions may do more to improve agency performance than continued persuasion research. Includes extensive references to environmental communication research.

(reviews--environmental communication)

109. Stamm, Keith. 1977. "Strategies for Evaluating Public Relations." Public Relations Review 3(4): 120-128.

The variables and measures used in evaluation research should depend on the particular public relations problem being studied. Successful evaluation should begin in the formulative stage of the public relations program, evaluate the program from the public's perspective, and analyze how people resolve particular issues rather than attempt to identify attitudinal types. These points are illustrated through discussions of the author's evaluations of several communication programs.

(program evaluation, public relations)

110. Stamm, Keith R. 1979. "Strategies for the Resolution of Environmental Issues." Journal of Environmental Education 11(1): 25-27.

Previous research by the author has shown that a person's environmental attitudes, or preferred solutions for environmental problems, vary across situations and issues. Therefore questions the assumption that people use information to reinforce established attitudes. Suggests, instead, that the type of environmental action a person supports will depend on the information he has about the situation, including: 1) definition of the problem as one of scarcity or overabundance, 2) perceived cause of the problem as self or others, 3) and the extent to which an individual's self-interest is at stake.

(attitudes--environmental, opinion development)

111. Stamm, Keith R. and Grunig, James E. 1977. "Communication Situations and Cognitive Strategies in Resolving Environmental Issues." Journalism Quarterly 54(4): 713-720.

Examined how people form opinions on environmental issues. Proposed that problem recognition, perceived freedom of choice and level of involvement, and the presence or absence of a referrent criterion influence whether people resolve issues by hedging, "squeezing" incompatible alternative solutions together, or wedging, choosing one of the alternative solutions. Tested whether the four variables could predict hedging and wedging on environmental issues by a purposive sample of 231 metropolitan residents. As predicted, hedging and wedging scores differed significantly across issues ($p < .01$), but tended to follow the issues more strongly than the four perceptual variables. Therefore, correlation coefficients were computed between strategies and the four situational variables. Predictions that hedging would relate positively with the presence of constraints and wedging would relate positively with the presence of a referrent criterion were not supported. As predicted, level of involvement was positively associated with hedging. Conclude that the nature of the issue and the situation in which it occurs, rather than cross-situational attitudes, appear to influence opinions on environmental issues.

(attitudes--environmental, opinion development, surveys)

112. Stankey, George H. 1972. "The Use of Content Analysis in Resource Decision Making." Journal of Forestry 70(3): 148-151.

Outlines a content analysis technique used to record and describe public input and illustrates its use in planning management of a wilderness area. Content analysis provides an objective, systematic, and quantitative description of public input. Input can be coded according to the geographical location, organizational interests, opinions, and underlying motivations of the source. Interpretation and use of the data is distinctly separate from the analysis. Use of the technique can supplant the agency's intuitive impressions of public input, permit cross-tabulation of several variables, and identify areas of agreement and disagreement between the agency and the public, thereby providing a basis for subsequent communication.

(content analysis--public input, natural resources management, public participation)

113. Stankey, G. H.; Hendee, J. C.; and Clark, R. H. 1975. "Applied Social Research Can Improve Public Participation in Resource Decision Making." Rural Sociology 40(1): 67-74.

Identifies topics for social research to improve public involvement performance. Of particular interest to communicators is the problem of diffusing information to and facilitating feedback from a variety of interests. Specific research topics include: 1) advantages and limitations of existing and identification of new input techniques, 2) identification of types of people who participate and how and why they participate, 3) quality of opinions obtained in relation to the input technique used, 4) effects of participation on reduction of conflict among competing interests, and 5) relative effects of different methods of presenting information on subsequent public response.

(media/methods, public participation)

114. Thomas, William A. 1975. "Public Acceptance of an Air Quality Index." Journal of Environmental Education 6(4): 18-24.

To determine the use and usefulness of the "Oak Ridge Air Quality Index," surveyed a random sample of 1,120 persons who requested information about the index. Classified respondents into professional or environmental interest groups. The response rate was 33 percent, of which 18 percent said they had not read the index. Of those who had read the index, 62 percent felt it needed further explanation. Of the 34 media respondents, 54 percent felt it was too difficult to explain to the public. The index was most often used to inform the public. Usefulness of pollution indexes is limited because they describe past conditions and do not address the effects of air pollution on human health.

(air pollution reporting)

115. Thompson, Carl. 1973. "Communicators and Their Environmental Problems." Public Relations Journal (May): 16-17, 34.

The public relations practitioner must understand and know how to interpret environmental issues. Describes new corporate publics interested in environmental issues and discusses their information needs and problems inherent in communicating with them.

(information needs, public relations)

116. Tichenor, Phillip J. 1979. "Teaching and the 'Journalism of Uncertainty'." Journal of Environmental Education 10(3): 5-8.

The controversy which increasingly surrounds science and environmental reporting requires that the journalist determine the objectivity as well as the credibility of information sources. Student journalists should be taught to analyze social situations in addition to technical information and to write so that the public can evaluate arguments and data used by a growing number of opposing information sources.

(conflict reporting)

117. Tichenor, Phillip J.; Donohue, George A.; and Olien, Clarice N. 1977. "Community Research and Evaluating Community Relations." Public Relations Review 3(4): 96-109.

To determine if the community relations goal of compatibility between the organization and the home community can be achieved, certain characteristics of the community should be analyzed. The authors review and draw several conclusions from community research: The less pluralistic a community, the more likely it is to take a consensus approach to public decision-making. In a small, rural community, concern for maintaining community control may determine the public's position on an environmental issue. Newspapers and other mass media rarely define conflict issues but rather report issues raised by other organizations. The expertise supporting any argument will likely influence media coverage of that position.

(community, conflict, media coverage, public opinion--environmental)

118. Tichenor, Phillip J.; Olien, Clarice N.; and Donohue, George A. 1976. "Community Control and Care of Scientific Information." Communication Research 3(4): 403-424.

Support by the general public and community leaders for the wide distribution of scientific information and its use in public decision-making was hypothesized to be greater in a large, heterogeneous community than in a small, homogeneous one. Adults in an urban and rural Minnesota community were interviewed in 1972 and 1974. Separate area probability samples were drawn for each survey. Community leaders involved in pollution abatement decision-making were interviewed in 1973. A majority of the public respondents in each community supported the distribution and use of scientific information, but as predicted, support was greater in the urban community in both study periods. The hypothesis that consensus between leaders and the public would be greater in the rural community was not supported. Rural leaders expressed as much support for the distribution and use of scientific information as urban leaders. The findings suggest that while community structure may influence public views about distributing and using scientific information, leader views may be influenced by forces outside the community. Leader communication behavior, however, may be quite responsive to community structure.

(community, decision-making, dissemination, pollution, surveys)

119. Tichenor, Phillip J. and Wackman, Daniel B. 1973. "Mass Media and Community Public Opinion." American Behavioral Scientist 16: 593-606.

Analyzed the relationships between media use and levels of agreement between public officials and the general public. Hypothesized that persons exposed to metropolitan media will show less agreement with officials than persons exposed to local media. Interviewed 15 officials and an area probability sample of 125 adults in a Minneapolis, Minnesota, suburb that had released treated sewage upstream from Minneapolis. Opinions on the issue were evenly divided in the community. As predicted, persons who read the local newspaper showed stronger agreement with officials' views on the sewage issue (i.e., favored the action). Conclude that the results reflect the conflict reporting function of metropolitan media and system-maintenance function of local media.

(media coverage, public opinion--environmental)

120. Trump, Christopher G. 1974. "The Public Eye on Pollution." Environment 16(10): 13-16.

Federal law requires official public notice of applications for pollutant discharge permits. Notices detail the petition and tell the public how to request a hearing on it. In one case cited to illustrate problems with current methods of informing the public, notices were printed in the newspaper's advertising section, set in small type, and appeared only once, on certain days of the month. One official suggested interested citizens contact environmental groups for information rather than rely on such notices.

(media coverage, pollution)

121. Weil, Andrew W. 1970. "Role of PR in Environmental Action." Public Relations Journal (November): 10-14.

Describes how a communications department coordinated one firm's pollution control program. After establishing the program, the department identified internal and external publics and developed communication channels to keep them abreast of the company's progress.

(public relations)

122. Wiebe, G. D. 1973. "Mass Media and Man's Relationship to His Environment." Journalism Quarterly 50(3): 426-432, 446.

To successfully use the mass media to encourage social and individual action on environmental problems, one must overcome what the author calls a sense of "well-informed futility" among receivers. Lack of feedback opportunities and integration of information with receivers' experiences reduce their sense of responsibility for and competence in acting on mediated information. This results in receivers becoming observers of problems rather than participants in their solutions. To encourage action, suggests emphasizing local problems, using local media, and explicitly inviting receivers to act. Mediated messages can also encourage action by influentials, not because they respond to the message per se, but because they are sensitive to public reaction. Media messages should therefore consistently associate environmental problems with appropriate influentials.

(behavior, media/methods)

123. Wiggins, Bruce. 1972. "Applying the Fairness Doctrine to Environmental Issues--Friends of the Earth vs F.C.C." Natural Resources Journal 12(1): 108-115.

The Fairness Doctrine requires broadcast licensees to encourage fair presentation of opposing sides of an issue. Compliance is judged on overall performance. In 1970, Friends of the Earth used the Fairness Doctrine to obtain coverage of air pollution issues raised by advertisements for large-engine cars and high-test gasolines. Discusses implications of the court ruling for media coverage of other environmental problems. Application of the Fairness Doctrine extends only to recognized public issues and products that present a public health hazard.

(advertising, media coverage, public health, television)

124. Witt, William. 1970. "An Annotated Bibliography of Conservation Communications Research." Journal of Environmental Education 1(3): 98-101.

Presents an abbreviated version of a pioneer annotated bibliography compiled to facilitate conservation communications research. The bibliography is divided into four sections: 1) Studies in Attitudes, Opinions, and Behavior, 2) Studies in Channels of Communication, 3) Readings in Conflict and Public Opinion, and 4) Contributions from members of the Theory and Methodology Division of the Association for Education in Journalism. A fifth section, intended to acquaint practicing journalists with the mass communications field, includes communication reviews.

(bibliographies--conservation communications)

125. Witt, William. 1972. "Multivariate Analysis of News Flow in a Conservation Issue." Journalism Quarterly 49(1): 91-97.

Examined audience influence on newspaper coverage of shoreland zoning. Hypothesized that: 1) coverage of two government releases on zoning would be greater in counties closer to adoption of zoning, and 2) coverage, membership in regional planning commissions, and shoreland development would comprise a system significantly related to county zoning progress. Based on government reports, each of 71 Wisconsin counties received zoning progress scores over a one-year period. Median coverage of the releases was 41.1 percent of daily circulation in each county. Results supported both hypotheses: Counties having higher zoning progress scores rated above the median in news coverage. In 24 counties for which development data was available, news coverage, development, and membership explained 57 percent of the variance in zoning progress (r=.755). As predicted, development and membership were negatively related to progress. Suggests media coverage supports the audience's views because gatekeepers rely on community feedback to determine what is news.

(content analysis--newspapers, natural resources planning)

126. Witt, William. 1973. "Communication Concepts for Science and Environmental Communications." Journal of Environmental Education 5(1): 58-62.

The purpose of communication models is to depict interactions whereby individuals, groups, and society adjust to change. Described are three communication models, emphasizing, respectively, events occurring between stimulus and response, coorientation, and the role of gatekeepers. Also presents a model depicting the flow of science and environmental information between scientists, the media, environmental agencies, and the public.

(communication models, environmental mass communication)

127. Witt, William. 1974. "The Environmental Reporter on U.S. Daily Newspapers." Journalism Quarterly 51: 697-704.

Reports results of national survey of environmental reporters selected from a list published in 1970 by Editor & Publisher. Usable questionnaires were returned by 55 reporters representing 53 newspapers in 23 states, a response rate of 58 percent. The typical respondent was a 31-40 year-old male with a bachelor's degree in journalism who worked 7.3 years on general assignment before working an environmental beat. Only 16 of 49 respondents reported exclusively on environmental topics. Most frequently used sources were, in order, conservation organizations, government, and business. Respondents primarily covered ongoing pollution and problems viewed by government as environmental. Respondents noted several reporting problems: inadequate training, manpower, time, and space; management's lack of concern and knowledge; unnecessary emphasis on crisis reporting; special-interest pressures; and dullness of and limited reader interest in technical topics.

(reporters, surveys)

128. Wittwer, Charlotte. 1970. "The 1908 White House Governor's Conference." Journal of Environmental Education 1(4): 142-145.

Recounts Gifford Pinchot's preparations for the 1908 Governor's Conference, designed to increase public support for the proposed transfer of forest reserves from the Department of the Interior to the Department of Agriculture. The massive pre-conference publicity, invitations of many reporters, personalities, and persons who agreed with Pinchot's proposals, and control over speeches and discussions lead Wittwer to conclude the Conference was a major pseudo-event.

(historical analysis--resource agency public relations)

129. Wohlwill, J. F. 1979. "The Social and Political Matrix of Environmental Attitudes." Environment and Behavior 11(1): 71-85.

Californians, irrespective of their socioeconomic status and political preferences, recently overwhelmingly supported coastal zone protection in a state referendum. Suggests that this almost universal support was partially due to media coverage of the issue.

(natural resources management, public opinion--coastal zone management)

130. Yovanovich, Jack J. 1974. "The Controversy over Energy." Public Relations Review 30(December): 20-22.

Senior vice president of Mitchell Energy and Development Corporation describes how his company succeeded in assuring environmental and community groups that it could successfully drill for oil and prevent pollution of the beaches at Galveston, Texas. The company used a variety of communication techniques to reach organized and unorganized publics including brochures, films, meetings, conversations with individuals, tours, and a safety demonstration.

(energy, media/methods, public relations)

131. Zoldin, Marvin. 1971. "The Communicator's Role in Resource Decision-Making." Journal of Environmental Education 2(4): 43-44.

Suggests that the mass media have largely assumed the role of alerting the public to natural resource problems, leaving traditional sources of conservation information the task of analyzing and interpreting alternative solutions. Resource agency communicators must also work to make resource managers more receptive to public involvement in their work.

(information programs, public participation)

132. Zimmerman, Donald E. 1972. "Sources of Conservation Information." Journal of Environmental Education 4(1): 62-63.

Reports media use by Kansas sportsmen. Questionnaires mailed to 250 persons selected systematically from the Kansas Fish and Game magazine's mailing list (192 responded), 250 randomly selected members of the Kansas Wildlife Federation (149 responded), and 32 Federation officers (22 responded), secured a 68.5 percent response. Combining the responses "occasionally," "often," and "always," respondents preferred television followed by sporting magazines and outdoor pages of newspapers for conservation and outdoor information. A higher percentage of magazine than Federation respondents knew about seven wildlife management practices. Also reports the sample's demographic characteristics and opinions about specific management practices.

(knowledge, media use, surveys)

133. Zimmerman, Donald E.; Scherer, Clifford; and Larson, Mark. 1978/79. "The Use of Conservation and Environmental Mass Media by Pennsylvania Educators." Journal of Environmental Education 10(2): 43-48.

Surveyed Pennsylvania environmental educators to identify their media habits and use of conservation information materials. Questionnaires were completed by 130 educators attending environmental workshops. In addition, 127 environmental education coordinators returned mail questionnaires, a 51 percent response rate. Coordinators had more environmental education experience than the workshop participants. Of the total sample, over two-thirds "seldom" or "never" used radio and about one-fourth "seldom" or "never" read newspaper outdoor pages for recreation and conservation information. While 57 percent of the coordinators "often" or "always" watched television programs on these topics, only 34 percent of the educators did. Coordinators were heavier users of the state Game Commission's magazine, movies, and slide sets. Suggests ways to increase teachers' awareness and use of these materials.

(environmental education, media use)

Book Abstracts

134. Albrecht, Stan L. and Mauss, Armand. 1975. "The Environment as a Social Problem." Pp. 556-605 in Armand Mauss (ed.), Social Problems as Social Movements. Philadelphia, Pa.: Lippincott.

Discusses the scope and nature of environmental problems, focusing on resource depletion and air and water pollution. Concludes that the conservation and environmental movements are related, but contemporary high levels of public concern are a distinct phenomenon that began in the 1960s, as a response to physical conditions and media coverage. Poll data show that concern has risen although the level of common air pollutants, for example, has declined. Outlines stages in the development of the environment as a social problem and notes conflicting interests of proponents of environmental reform.

(environmental movement, media coverage)

135. Barkley, Katherine and Weissman, Steve. 1970. "The Eco-Establishment." Pp. 15-24 in Editors of Ramparts (eds.), Eco-Catastrophe. San Francisco, Ca.: Canfield Press.

Contends the environment would be an important public issue in the 1970s because big business has orchestrated broad public concern in an effort to permit greater resource exploitation. Suggests Resources for the Future, funded by the Ford Foundation, took a lead role in mobilizing elite and general public interest in environmental issues, beginning in the 1950s, using a "controlled" press. Compares the environmental movement to the conservation movement, suggesting both mobilized public support for corporate policies under the guise of regulating private resource exploitation. Predicts grass-roots environmentalists would achieve only localized, incremental goals, with private corporations controlling major national environmental policies, regulations, and agencies.

(environmental movement)

136. Brooks, Paul. 1972. The House of Life. Boston: Houghton Mifflin.

Presents a selection of Rachel Carson's writing (published and unpublished) and attempts to show how she worked and wrote. Includes selected excerpts from Carson's letters to illustrate her attitudes toward life and work. Though Carson's book Silent Spring may have changed the course of history through an awakening of environmentalism in the world, Carson was not a crusader. The House of Life emphasizes Carson as a writer.

(environmental literature)

137. Caldwell, Lynton Keith. 1971. "Meeting the Challenge." Pp. 225-248 in Environment, by Lynton Keith Caldwell. New York: Doubleday.

Addresses environmental action in suggesting that a moral imperative is needed to guide the application of informed judgment. Notes that the absence of political thought adequate to the needs of our time causes many people to ask "what can we do about the environment?" Large numbers of organizations are sources of information and guidance not readily obtainable in other ways, but these organizations depend on large memberships for their effectiveness. The individual must take personal responsibility for the environment by working for environmental organizations and as voter and citizen, to obtain needed institutional changes. Individual commitment to the ecological movement is essential because the task is not and cannot be the exclusive mission of any class or group of people.

(environmental groups, environmental movement)

138. Caldwell, Lynton K.; Hayes, Lynton R.; and MacWhirter, Isabel M. 1976. Citizens and the Environment. Bloomington: University of Indiana Press.

Describes ways citizens have organized and acted in response to environmental problems. The causes and processes involved in citizen actions, including communication, can be explained only within a situational context. Examines over 60 cases of citizen action to describe a range of activities. Views environmental communication as the groups' responses to their tasks. Citizen groups have succeeded in modifying some agencies' environmental standards, but counter-pressures often maintain the status quo. Well-organized groups are most effective in promoting change.

(decision-making, environmental groups)

139. Davies, Clarence J. and Davies, Barbara S. 1978. The Politics of Pollution. New York: Pegasus.

Addresses the idea that public opinion is one of the crucial factors in any campaign for cleaner air and water. Environmental communication is seen as the translation of a perception into a request or demand that the government take action to alleviate an environmental problem. The authors believe the most effective way for the private citizen to influence the government's actions is usually through group affiliation. Describes various environmental interest groups and their membership rosters and cites some instances in which they have been effective.

(decision-making, environmental groups, public opinion--pollution)

140. Dunmire, William. 1976. "Interpretive Publications." Pp. 233-246 in Grant W. Sharpe (ed.), Interpreting the Environment. New York: Wiley.

Modern interpreters rely on publications to communicate with forest/park visitors. Outlines publications' limitations and advantages and describes types of publications and publishing procedures. Suggests publications can be one of the most effective communication tools in the interpretive area.

(publications)

141. Editors of Ramparts. 1970. "Editorial." Pp. vii-xii in Editors of Ramparts (eds.), Eco-Catastrophe. San Francisco, Ca.: Canfield Press.

Charges that societal problems cannot be neatly compartmentalized. Saving the environment must be synthesized with other problems such as racism and poverty. The solution rests with changing society in terms of redistributing wealth and reallocating resources. The 1970 Environmental Teach-Ins were a creation of the establishment to keep power in the hands of the profiteers and to obfuscate the issues. The establishment employs propaganda techniques to direct the public's attention toward the environment and away from those issues bring divisiveness and creating havoc with the system. Action, such as burning the Bank of America in Santa Barbara, is said to be more useful in saving the environment than are informational campaigns such as the Environmental Teach-Ins.

(environmental events, environmental movement)

142. Gilbert, Douglas L. 1971. Natural Resources and Public Relations. Washington, D.C.: Wildlife Society.

Public relations skills are as vital as technical skills in managing natural resources because a natural resources management program cannot succeed without public understanding and support. Illustrates all aspects of public relations, from communication principles and mass media use to working with internal publics and preparing exhibits.

(media/methods, natural resources management, public relations)

143. Graham, Frank Jr. 1971. "The Flesh." Pp. 310-318 in Man's Dominion, by Frank Graham. New York: M. Evans.

Details the DDT controversy and the role of Rachel Carson's Silent Spring in promoting stricter federal control of pesticide use and efforts to reduce water pollution. Views Silent Spring as providing impetus for the conservation movement in the mid-1960s. In support of his thesis, the author points to historical evidence on legislative attempts as well as information on public attitudes and opinions. The author points to time order as the measure of causality, thus viewing Carson's book, which could have been the by-product of the early movement and consciousness, as causing a mass consciousness.

(environmental movement)

144. Graham, Frank Jr. 1972. "The Resulting Outcry." Pp. 112-146 in John Opie (ed.), Americans and the Environment: The Controversy over Ecology. Lexington, Mass.: D. C. Heath.

Presents a history of industry and public reaction to the publication of Rachel Carson's Silent Spring. Posits that interest in the quality of the environment might never have gained as much attention without the publication of Silent Spring.

(environmental literature)

145. Hawkins, Donald E. and Vinton, Dennis A. 1973. The Environmental Classroom. Englewood Cliffs, N.J.: Prentice-Hall.

Suggests that the environment can be "brought to the classroom" through communications media. Presents communications media as being able to stimulate broad public awareness of the environment. Instantaneous global communication is seen as a possible solution to the environmental crisis. Communication may be the only answer to environmental problems. The mass communications media may be the most effective educators of the public.

(environmental education)

146. McEvoy, James III. 1972. "The American Concern with the Environment." Pp. 214-236 in William R. Burch, Neil H. Cheek, Jr., and Lee Taylor (eds.), Social Behavior, Natural Resources, and The Environment. New York: Harper and Row.

Using the Reader's Guide to Periodical Literature, examined patterns of environmental content from 1953-69 as indicators of changes in public interest in the environment. Found a 470 percent increase in the number of articles listed under seven environmental categories over the 16-year period. Cites three probable causes of the rise in public attention to and concern over environmental issues: 1) increased media coverage, 2) increased personal exposure to the natural environment, and 3) deterioration of the physical environment. Summarizes several public opinion surveys concerning geographical and demographic differences in expressed environmental concern and favored solutions to major environmental problems. Concludes that public concern is widespread, but particularly strong among the affluent, educated, and young. Notes gaps in research concerning public values and attitude change.

(content analysis--magazines, public opinion--environmental)

147. Molotch, Harvey. "Santa Barbara: Oil in the Velvet Playground." 1970. Pp. 84-105 in Editors of Ramparts (eds.), Eco-Catastrophe. San Francisco, Ca.: Canfield Press.

Analyzes the Santa Barbara oil spill, the efforts of area residents to prevent further accidents, and the response of the government and the oil industry to the spill and the residents. In this case study of the Santa Barbara oil spill and its aftermath, the author makes the following observations: 1) When ordinary routes (letter writing, petitioning, etc.) fail, citizens turn to extreme measures (demonstrations, civil disobedience) to prompt government action; 2) Unlike the oil industry and the government, citizens do not have access to the media; 3) The oil industry minimized the environmental damages in its press releases; 4) The local newspaper, traditionally conservative, joined the fight against the oil industry. In addition to criticizing the government and the oil industry, it provided some in-depth reporting of how the oil industry operates including the collusive nature of the relationship between the oil industry and government; 5) Due to national media coverage, Secretary of Interior Walter Hickel was forced to halt oil drilling; 6) Although the national media publicized the oil spill, its coverage was superficial. For example, the relationship between university researchers and the oil industry received no publicity outside Santa Barbara.

(media coverage, pollution)

148. Morrison, Denton E.; Hornback, Kenneth E.; and Warner, W. Keith. "The Environmental Movement: Some Preliminary Observations and Predictions." 1972. Pp. 259-279 in William R. Burch, Jr., Neil H. Cheek, Jr., and Lee Taylor (eds.), Social Behavior, Natural Resources, and the Environment. New York: Harper and Row.

Outlines the history of the environmental movement and describes the authors' expectations for its future development. The movement initially relied on educational campaigns to change individual and group behavior. Predicts, however, that the movement will increasingly employ power strategies aimed at coercing political and legal changes. Public education and participation activities will be used in the future to mount public support for political and legal changes. This further suggests that future educational campaigns will focus on values and attitudes rather than individual behavior.

(decision-making, environmental movement, information programs)

149. Murray, Allan. 1973. "Outlines of the Ecological Message: Changing Content and Clientele." Pp. 53-56 in Clay Schoenfeld (ed.), Interpreting Environmental Issues--Research and Development in Conservation Communications. Madison, Wi.: Dembar Educational Research Services.

Summarizes a collection of papers concerning the subtle and overt human problems environmental communication must address. Environmental problems are essentially social problems, rooted in human attitudes toward nature and social values and priorities. Environmental communication must address national and global social inequities and the social values and institutional behaviors that contribute to these inequities. Environmental communication must provide people with basic knowledge of the effects of human behaviors on the natural and built environments.

(environmental mass communication)

150. Reiger, John F. 1975. American Sportsmen and the Origins of Conservation. New York: Winchester Press.

Describes the beginnings of the American conservation movement, focusing on the contributions of hunters and fishermen. Most of the men who established sporting journals advocating conservation were avid hunters and fishermen. Publications such as Forest and Stream, American Sportsman, and Field and Stream, and men such as George Bird Grinnell, Wilbur F. Parker, and Nicholas Rowe encouraged the formation of sportsmen's clubs. The Boone and Crockett Club, for example, fought to halt degradation of their favorite hunting and fishing haunts and the commercial exploitation of these sports. Sporting magazines focused public attention upon the plight of wildlife and forests. The Forest and Stream Publishing Company, for example, annually published a booklet explaining the purposes of game laws. Editors of sporting journals also lobbied for federal legislation to protect wildlife and their habitats. Grinnell, for example, led the fight to have national parks declared wildlife preserves and protect Yellowstone National Park from commercial exploitation. Also states Grinnell strongly influenced Theodore Roosevelt's national conservation policies. Gifford Pinchot, administrator of Roosevelt's conservation programs, carried out Grinnell's belief in the efficient administration of natural resources. The book is based on biographies of early conservation leaders, historical accounts of hunting and fishing, conservation literature, sporting journal articles and editorials, annual reports, and government documents.

(historical analysis--conservation communication)

151. Ross, John. 1973. "The Role of Interpretation in Policy Formation: Essays and Investigations." Pp. 186-192 in Clay Schoenfeld (ed.), Interpreting Environmental Issues--Research and Development in Conservation Communications. Madison, Wi.: Dembar Educational Research Services.

Reviews a collection of papers concerning problems and issues surrounding communication in environmental policy-making. Views communication as a policy-making tool used to develop and implement environmental resource management plans. Focuses on communication's role in providing the public with environmental information and facilitating public participation. Suggests reasons for rising public interest in environmental policy-making and outlines information systems through which the public gains access to environmental information and the policy-making process.

(reviews--environmental communication)

152. Rubin, David M.; Harris, Thomas H.; Jones, David W., Jr.; Sachs, David Peter; and Schoenfeld, Clarence A. 1973. "Environmental Information." Pp. 171-177 in Public Policy Toward Environment 1973: A Review and Appraisal, Vol. 216. New York: New York Academy of Sciences.

Assesses public access to and media performance in disseminating environmental information. Suggests the National Environmental Policy Act has increased public access to information but most activities of private businesses remain closed to public scrutiny. The media have helped develop public awareness of environmental problems but have been less successful in informing the public about complex principles and issues underlying these problems. Outlines internal and external barriers to improved environmental coverage. Suggests that until media technology limits the gatekeepers' role, we must depend on the media to close the environmental information gap between "experts" and the public.

(decision-making, knowledge, media coverage)

153. Rubin, David M. and Sachs, David P. (eds.). 1973. Mass Media and the Environment--Water Resources, Land Use and Atomic Energy in California. New York: Praeger.

Reviews research conducted at Stanford University on media coverage of a range of environmental issues, primarily in the San Francisco Bay Area. The theme underlying summaries and suggestions concluding each chapter is that the media have a responsibility to develop an electorate informed on environmental issues. Each chapter focuses on barriers to discharging this responsibility, ranging from media response to pseudo-events to outside pressures and to the complexity of environmental topics. One chapter illustrating the complex problems in environmental reporting details utility plant siting and analyzes coverage at critical points in the siting process. The appendix contains questionnaires, coding sheets, and data supporting the studies discussed in each chapter.

(content analysis--magazines, content-analysis--newspapers, media coverage, surveys)

154. Sandman, Peter M. 1974. "Mass Environmental Education: Can the Media Do the Job?" Pp. 207-247 in James A. Swan and William B. Stapp (eds.), Environmental Education. New York: Wiley.

Views the phenomenal growth in environmental information in the mass media as response to public concern. The media are seen as the best available tools of mass environmental education, but their effectiveness is questioned. Suggests the media could be more effective by selecting information related to public attitudes and behaviors. Rather than presenting ecological principles, outlining potential actions, raising environmental questions and issues, and assessing the blame for environmental problems, the mass media tend to report only recent and public events. Discusses barriers preventing the media from presenting more educational information.

(environmental education, media coverage)

155. Sax, Joseph L. 1971. Defending the Environment: A Strategy for Action. New York: Knopf.

Addresses the need to reassert citizen initiation in the management of the environment. Environmental communication is seen in the courtroom, where individual citizens or groups can obtain hearings on equal terms with highly organized interests. Courts are not seen as substitutes for legislative processes, but as a means of providing access to legislatures and to aid in developing a more effective democracy. A long struggle awaits environmental activism, and citizens trying to realize their full rights will be in the center of the struggle. Sax presents a model for citizens' environmental rights, discusses basic procedures and principles applied to ecological issues, and suggests ways action can be taken.

(decision-making, environmental groups)

156. Schoenfeld, Clay. 1973. "The Environmental Communications Ecosystem: An Overview of the Field." Pp. 14-19 in Clay Schoenfeld (ed.), Interpreting Environmental Issues--Research and Development in Conservation Communications. Madison, Wi.: Dembar Educational Research Services.

Introduces collected papers reviewing research and the function of environmental interpretation by defining the terms "interpretation" and "environment." Environmental interpretation is mainly concerned with issues involved in personal and collective decision-making regarding environmental management. Whether referred to as public information, education, or relations, environmental interpreters operating in a variety of institutions are planning and producing information about environmental management issues. Describes print and electronic media that produce most of the environmental information received by the general public. Notes criticisms of media performance.

(review--environmental communication)

157. Schoenfeld, Clay (ed.). 1973. Interpreting Environmental Issues--Research and Development in Conservation Communications. Madison, Wi.: Dembar Educational Research Services.

A collection of articles published in the 1969-72 issues of the Journal of Environmental Education. An original paper reviewing and exploring questions raised by the articles precedes each chapter. Selections represent the following themes: 1) an overview of practices and research in environmental communication, 2) content and audience research, 3) media and methods, 4) communication and environmental planning, and 5) behavioral research.

(environmental mass communication, media/methods)

158. Sharpe, Grant W. (ed.). 1976. Interpreting the Environment. New York: Wiley.

A collection of papers by experts in the field of interpretation. The editor opens the book with an overview of interpretation's goals: 1) to help visitors develop greater understanding and appreciation of the resource, 2) to support resource management goals, and 3) to promote public understanding of the resource agency and its programs. Most of the contributions focus on interpretive programs for public-lands visitors. Discussions of the process and history of interpretation set the background for descriptions of interpersonal and self-guided interpretation techniques and new interpretation areas, including urban and marine sites. Also reviews interpretive training programs and current research. A summary of interpretive activities abroad closes the book. A useful guide to the history, techniques, and problems of interpretation.

(media/methods, natural resource interpretation)

159. Stamm, Keith R. 1973. "Conservation Communications Frontiers: Reports of Behavioral Research." Pp. 227-236 in Clay Schoenfeld (ed.), Interpreting Environmental Issues--Research and Development in Conservation Communications. Madison, Wi.: Dembar Educational Research Services.

Introduces a collection of reports on environmental communication studies and assesses current research direction. Preoccupation with attitude-change as the objective of environmental communication and limited, narrow definitions of "knowledge," "opinion," and "attitude," fail to reveal if respondents understand ecological relationships underlying environmental problems. By developing typologies and identifying correlates of environmental attitudes, attitude research may suggest some of the underlying orientations leading people to support or oppose specific resource programs, but situational variables, including self-interest in the issues, can influence attitudes and opinions on a given issue. Studies using interpersonal variables can contribute to policy-making by identifying areas of conflict and inaccurate perceptions between agencies and the public.

(review--environmental communication)

160. Strong, Douglas H. 1971. The Conservationists. Menlo Park, Ca.: Addison-Wesley.

Within the framework of biographies, describes the men who fostered the American conservation movement. Some of these men fostered conservation through their writings and their ability to publicize issues. Henry Thoreau's Walden helped create a new attitude toward nature. Most Americans ignored George Perkins Marsh's Man and Nature, but it did lead to the reversal of attitudes about the danger of timber famine. Gifford Pinchot used publicity techniques to amass public opinion in favor of his "practical forestry" programs. John Muir's magazine articles publicized the degradation of wilderness and fostered an understanding and appreciation of wilderness. Stephen Mather used techniques learned working for newspapers and in advertising to promote public use and awareness of national parks. Aldo Leopold's philosophy in A Sand County Almanac helped conservationists realize that for conservation to succeed, public attitudes would have to change. Stewart Udall's The Quiet Crisis made Americans aware of the necessity for conservation. This book is based on the writings of the author's subjects.

(historical analysis--conservation communication)

161. Voigt, William R. 1976. Public Grazing Lands. New Brunswick, N.J.: Rutgers University.

Includes an historical account of the attempts by a small, influential group of western ranchers to obtain exclusive rights to over 200 million acres of Western public rangeland, and the opposition of conservationists, public hearings and resulting media coverage sharpening the issue.

(historical analysis--conservation communication)

162. Witt, William. 1973. "Environmental Media and Methods in Perspective: Roots and Trends." Pp. 125-137 in Clay Schoenfeld (ed.), Interpreting Environmental Issues--Research and Development in Conservation Communications. Madison, Wi.: Dembar Educational Research Services.

Reviews the components of environmental communication, noting that in practice and theory this field should not be separated from general communication. Discusses links between past and current nature writing and current public opinion about technology, a common theme in nature writing. Outlines advantages and limitations of broadcast and print media as vehicles for environmental information dissemination. Reviews the role of resource interpretation programs and historical and current public relations practices in public and private sectors. Concludes by reviewing communication models and the effects of technology on public access to environmental information in the future.

(review--media/methods)

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